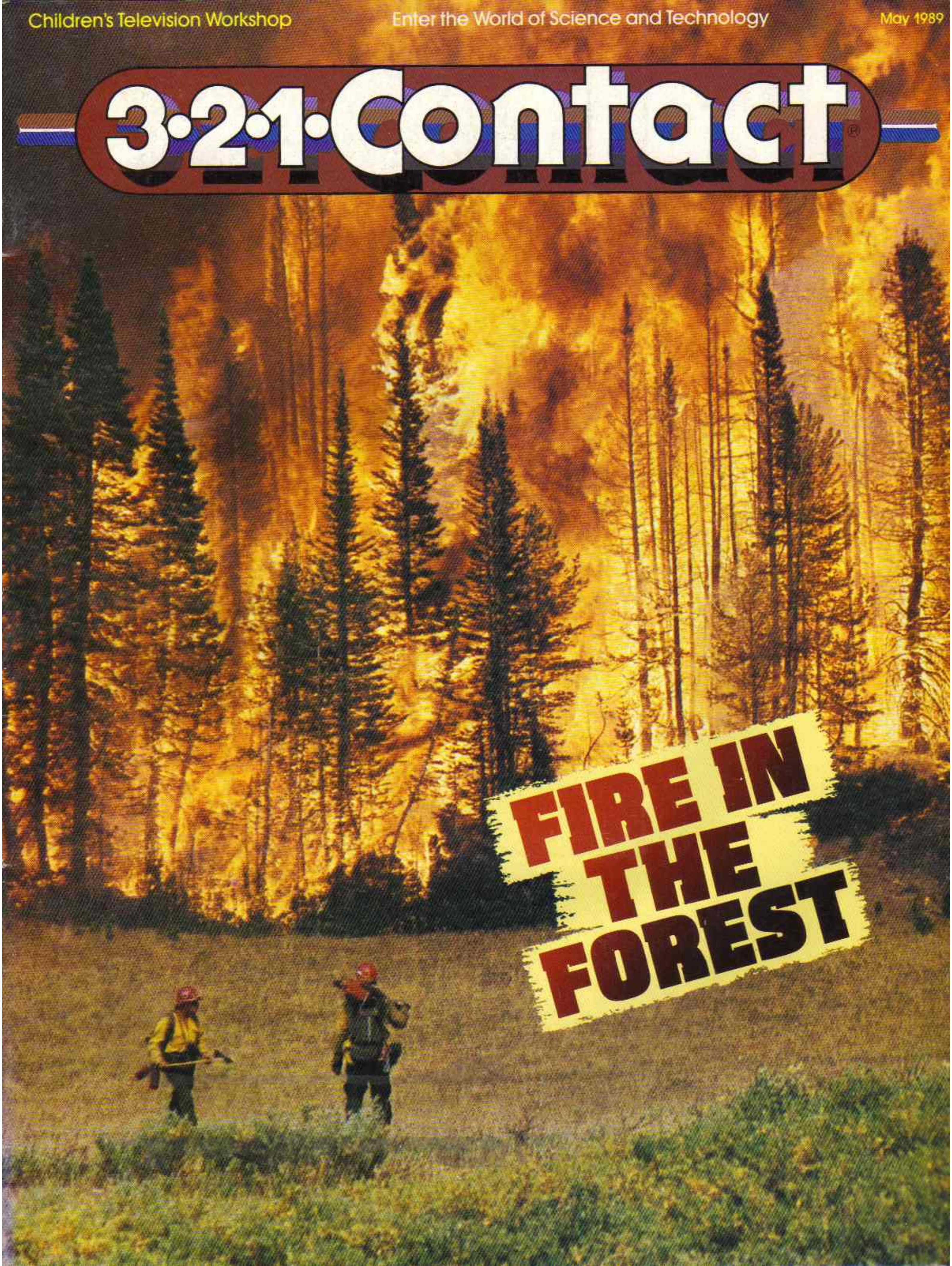
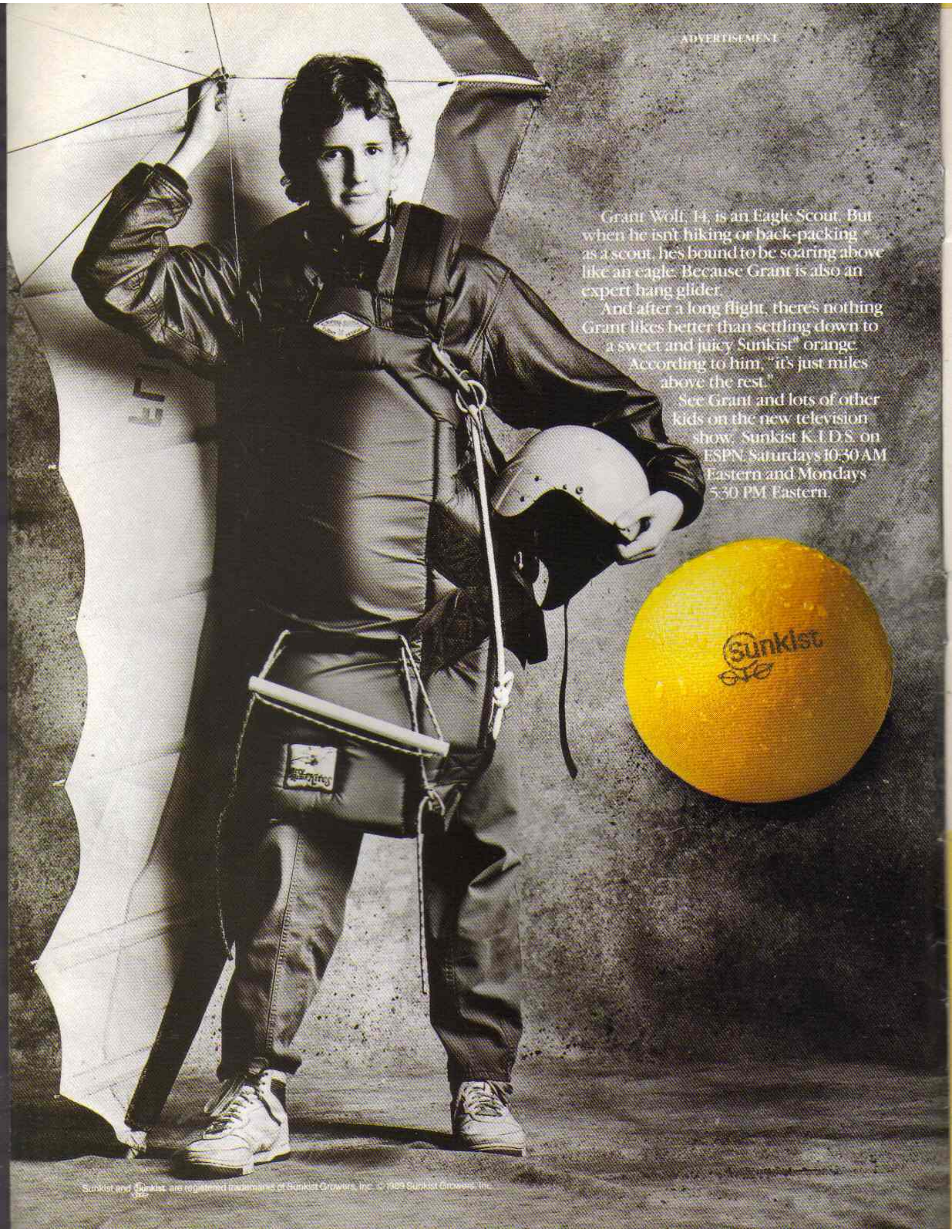
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Featuring This Month

Square One TV Special Section

Departments

COVER PHOTO: Last summer, firefighters had a tough time keeping the fires at Yellowstone National Park under control. Copyright © 1988 Seattle Times.

Tomorrow's News Today

Beach Clean-Up

Oil spills mean big trouble for beaches. The oily sand has to be moved away and buried someplace else. This costs a lot of money.

Scientists in Nova Scotia, Canada, think they've found a natural way to clean the beach and save the sand. They spread fertilizer—the kind used to help a garden grow—on top of the oily beach. And the oil disappears.

How? Bacteria, which are microscopic plants, come to feed on the decaying plants and animals killed by the oil spill.

When fertilizer is spread on the oily beach, the bacteria multiply. The fertilizer is a special taste treat for bacteria. When they're done eating the fertilizer, the hungry bacteria eat the oil.

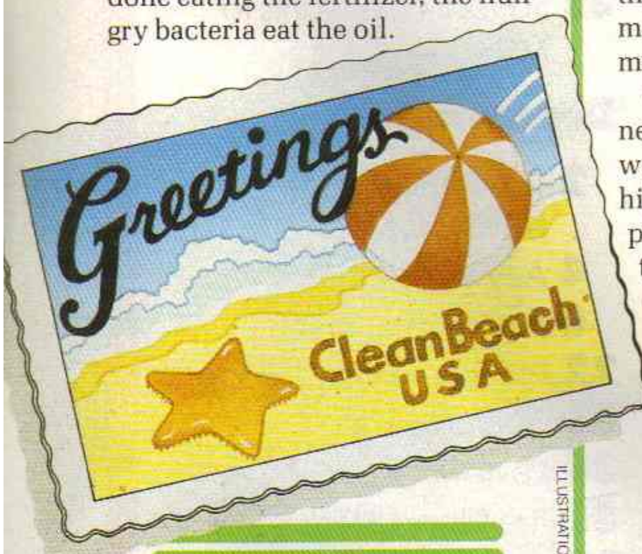


ILLUSTRATION BY MARTI SHOHET

Moose Underpass

Q. Why did the moose cross the road?

A. To get to the other side.

Q. *How* did the moose cross the road?

A. Through the moose tunnel, of course!

Scientists in Alaska were concerned about the number of

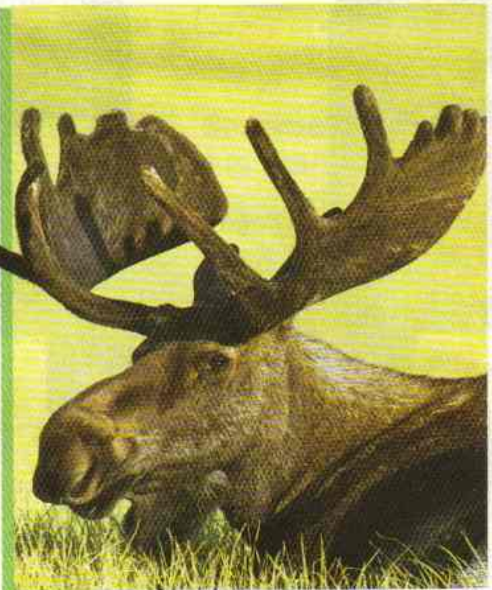


PHOTO © HARRY ENGELS/ANIMALS ANIMALS

moose that get hit by cars. The moose accidents were happening on a major highway that cuts through an area where a lot of moose live. Now, the problem may be solved.

Scientists built a concrete tunnel under a major highway. Then, workers put up seven miles of highway lights and some moose-proof fencing. They made sure that the moose couldn't cross over the highway. This, scientists have found, makes it safer for moose to travel from one side to the other—underneath the road.

Table Talk

How would you like to have a talking sofa—or a chair that can climb stairs? You can't buy "robot furniture" at the store—not yet, anyway. But it is being developed.

Robot furniture will be especially useful for disabled people who have a hard time moving around.

The moving furniture is designed so you can *command* it to do tasks. "Table," you might say, "Move forward." The table moves, bringing a book to your bedside.

But even robot tables have their limits. If you said: "Do my homework," the table might say, "No way!"

ILLUSTRATION BY BRAD HAMMOND

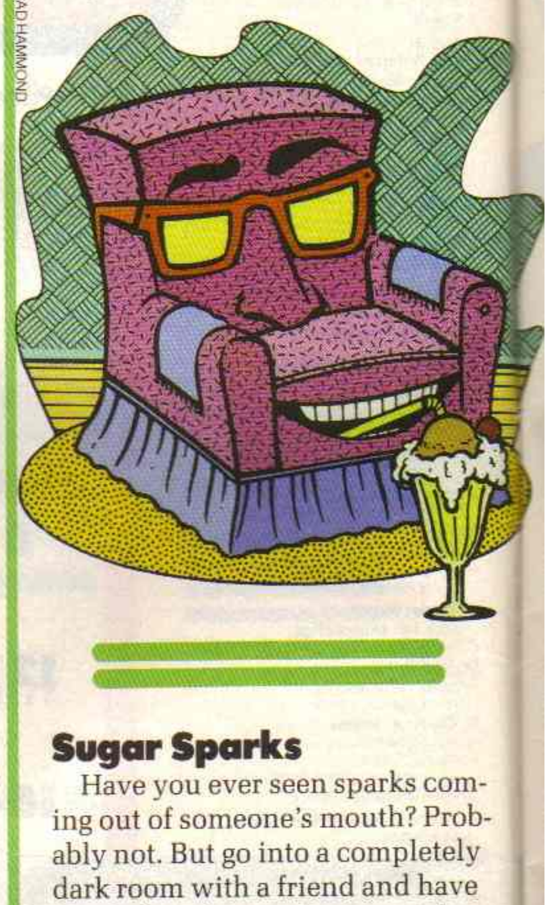


ILLUSTRATION BY MARY DUARTE

Sugar Sparks

Have you ever seen sparks coming out of someone's mouth? Probably not. But go into a completely dark room with a friend and have him or her chomp down on a dry Wintergreen Life Saver. (First wait a few minutes for your eyes to get used to the dark.) You should see some tiny blue-green sparks!



Linda Sweeting, a chemist, has been studying the sparking sweets. According to Sweeting, plain sugar

cubes knocked together also spark. But Wintergreen works best because Wintergreen makes brighter, more colorful sparks.

Out on a Limb

Peter Jenkins spends a lot of time just hanging around—in trees. He's a tree surgeon who runs a tree-climbing school in Atlanta, Georgia. He wants to turn tree climbing into the next big sport.

Jenkins' classroom is a clearing with two 90-foot white oak trees. In the first-time climber course, students learn how to loop the ropes over high branches and to hoist themselves up. Everybody wears a "butt strap saddle" around his or her waist. The saddle prevents anyone from falling.

All kinds of students come to learn how to climb trees—whole families, even retired rock climbers.

According to Jenkins, people are scared to climb high up the big trees. "They usually stall out at 50 feet. I tell them just to sit on a big branch for a while," Jenkins told CONTACT. They get their confidence back when they see everybody else having a good time.

Of course no one should climb a big tree on their own, Jenkins added. Without an expert, it could be dangerous.



PHOTO © KEVIN KOLZYNSKI/SPORTS ILLUSTRATED

Laser Drill

Imagine yourself sitting—make that *squirming*—in the dentist's chair as you wait for a cavity to be filled. But instead of reaching for the drill, the dentist reaches for the laser. *Presto*! The laser beams clean out your tooth for the filling. And you don't feel a thing!

Laser beams work by pulsing light energy into the decay of the tooth. The pulses last only 30 *trillionths* of a second. It happens so



ILLUSTRATION BY DEAN YEAGLE

fast that you don't even notice it. The laser beam *vaporizes* the decay.

David Dolson, a spokesperson for dental researchers, says that patients who have tried lasers like it a lot better than the drill. "They don't feel anything and they don't hear anything," Dolson told CONTACT.

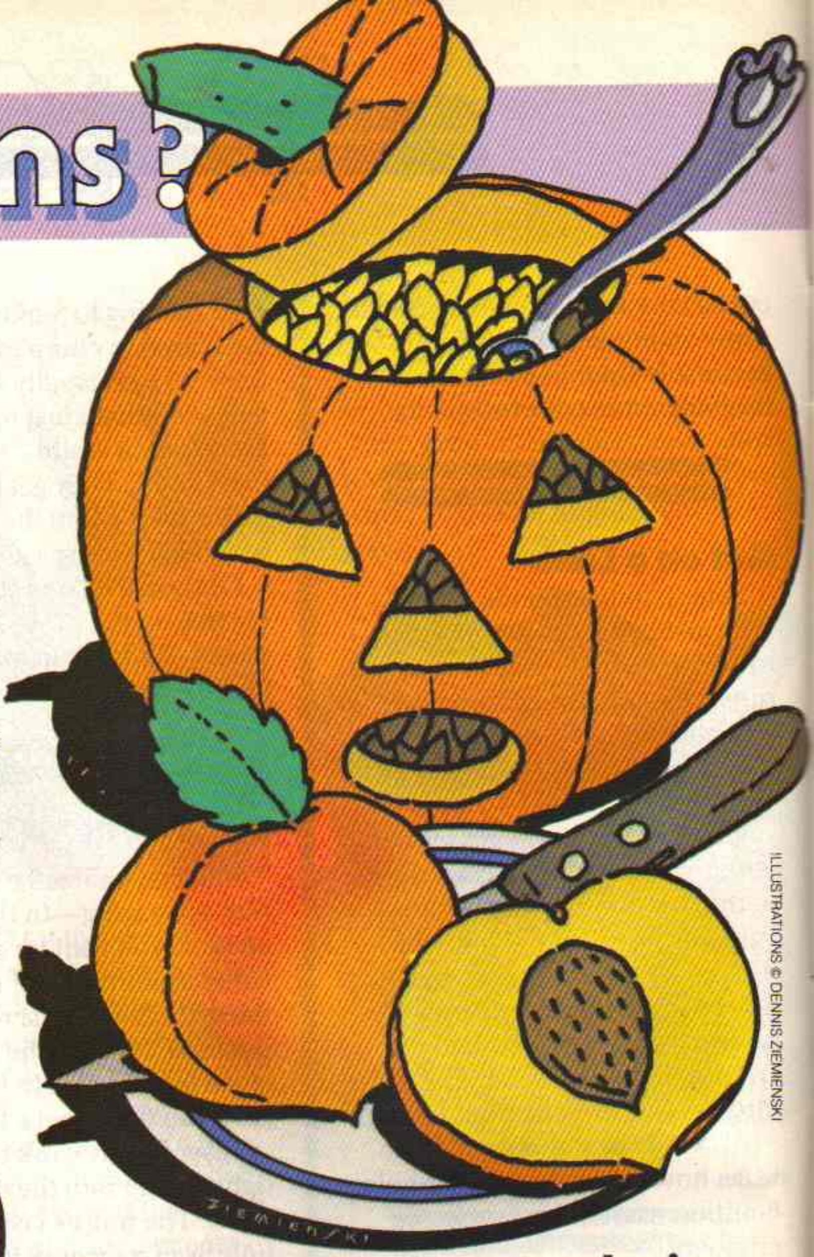
Dolson says that within two or three years, most dentists will be using laser beams. And that should really "lighten" the pain!

So What's New?

You tell us and you'll get a nifty CONTACT T-shirt—if we print your story. Send us any science story from the news that you think our readers would like to know about. (Be sure to tell us your T-shirt size and where you heard the story.) Send to:

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Any Questions?



Why are there so many seeds in a pumpkin and only one in a peach?

Peach seeds are big and come one to a peach. Pumpkin seeds are smaller, but are produced by the hundreds. But big or little, many or few, seeds are very important to a plant. Each seed can produce a new little plant just like the plant it came from. Since seeds are so important, all plants produce extra seeds beyond what they need just to survive.

Each plant produces seeds in the way that best helps it survive. A pumpkin plant makes only a *few* pumpkins, so each pumpkin has *many* medium size seeds. Animals eat the pumpkins and carry the seeds away. After the seeds pass through the animal's body, they go back to the ground. There they may grow into new plants.

Each peach has only *one* large seed. But a peach tree has *many* peaches. So every time an animal eats a peach, it lets the big pit fall to the ground. Any one of these peach pits may grow into a new peach tree.

Question sent in by Lissie Dyer, West Orange, NJ.



Why can you hear your echo in some places and not in others?

No one can see sound. But if you could, an echo would look sort of like a rubber ball bouncing against a wall. An echo happens when sound bounces back from an object.

When you speak or shout, your voice sends out vibrations. These vibrations cause particles of air to move. The movements of these particles of air are called *sound waves*. When sound waves hit a large, smooth object and bounce back, you sometimes hear the sound a second time. That is the echo.

If you don't hear an echo, it probably means that the sound waves didn't hit the wall in just the right way. It could mean that the wall is not big enough to send back the sound. Or, maybe the sound of your voice was too weak.

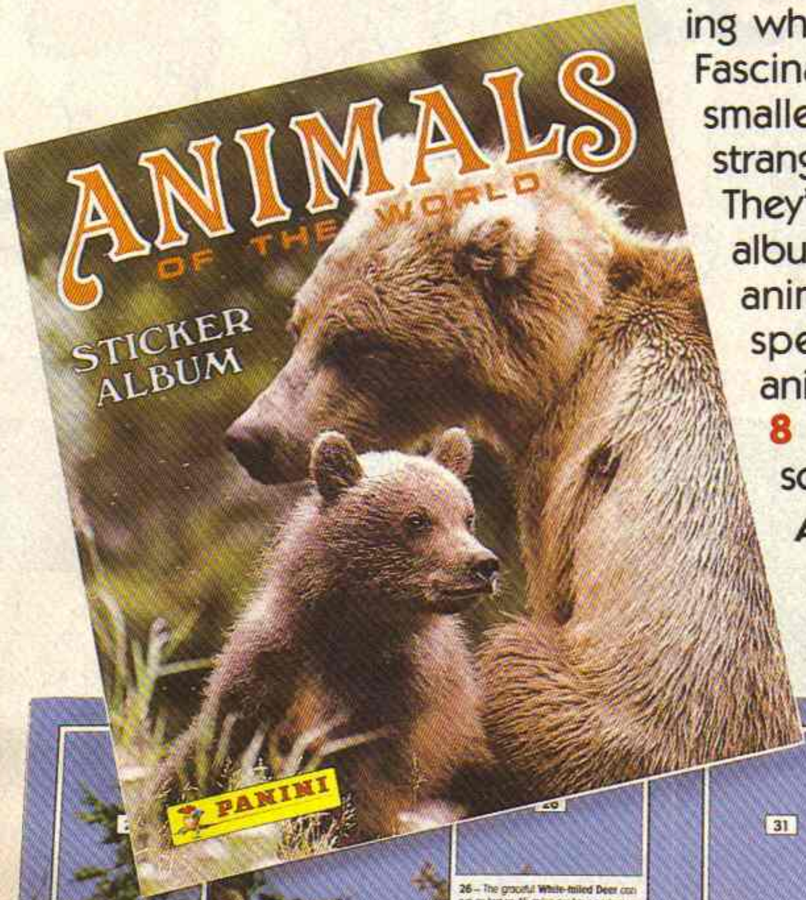
If you really want to hear your voice bouncing around, yell into a canyon. A canyon has many surfaces that will bounce sound waves around. If the sound waves bounce from wall to wall, you will hear three or four echoes!

Question sent in by Laurel Romer, Sidney, OH.

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ANIMALS of the WORLD

An exciting and brand new Album and Sticker Collection from PANINI.



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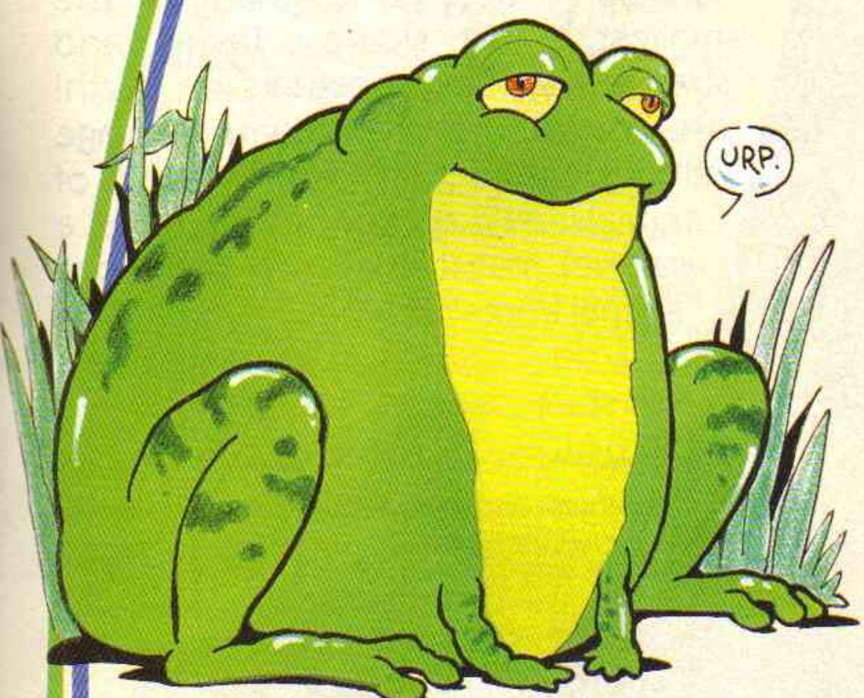
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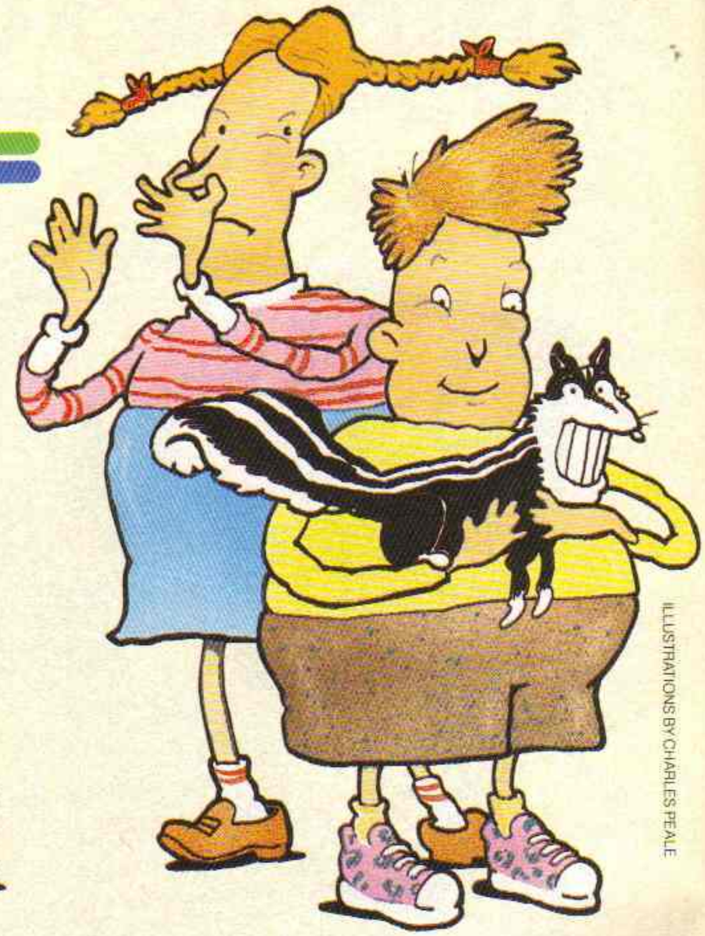


You need 192 stickers to complete this collection.

Factoids



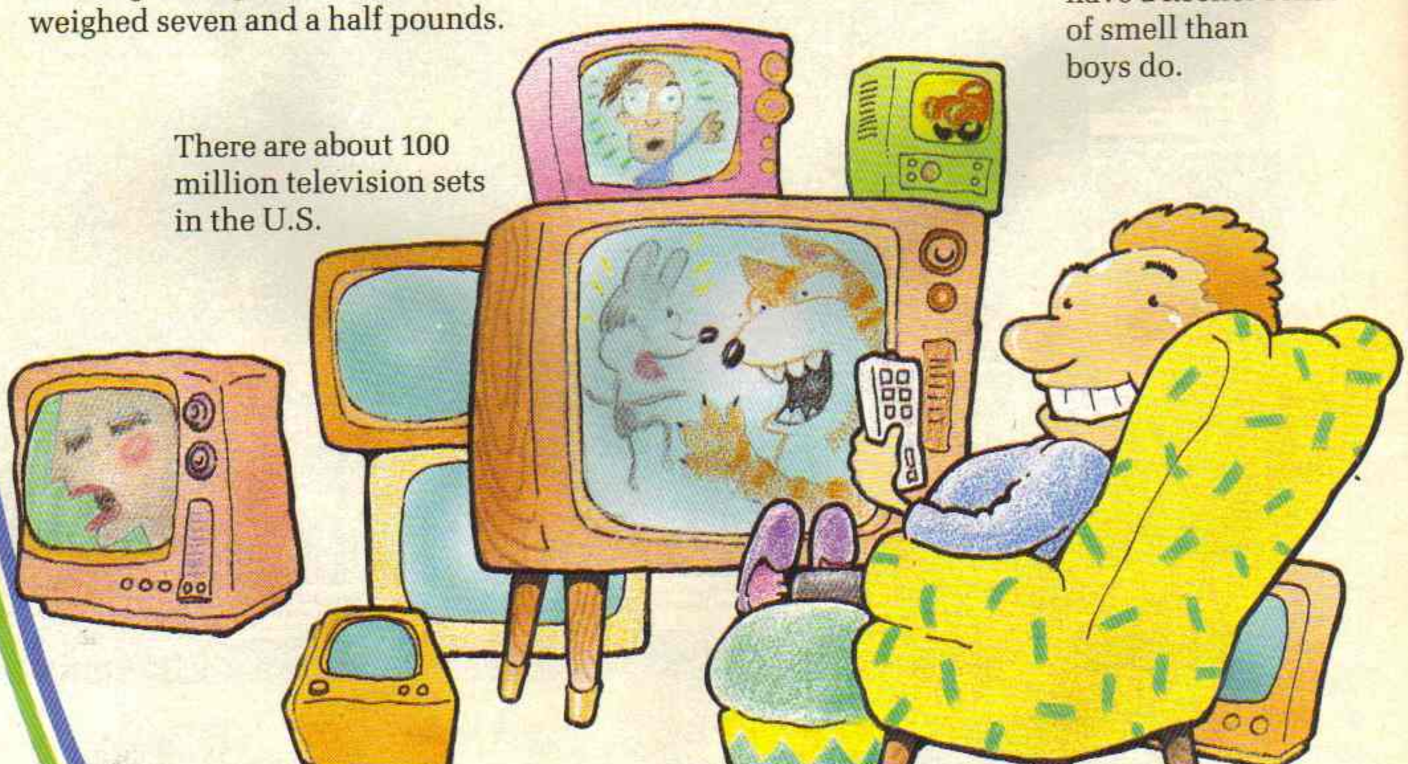
The largest frog of all time weighed seven and a half pounds.



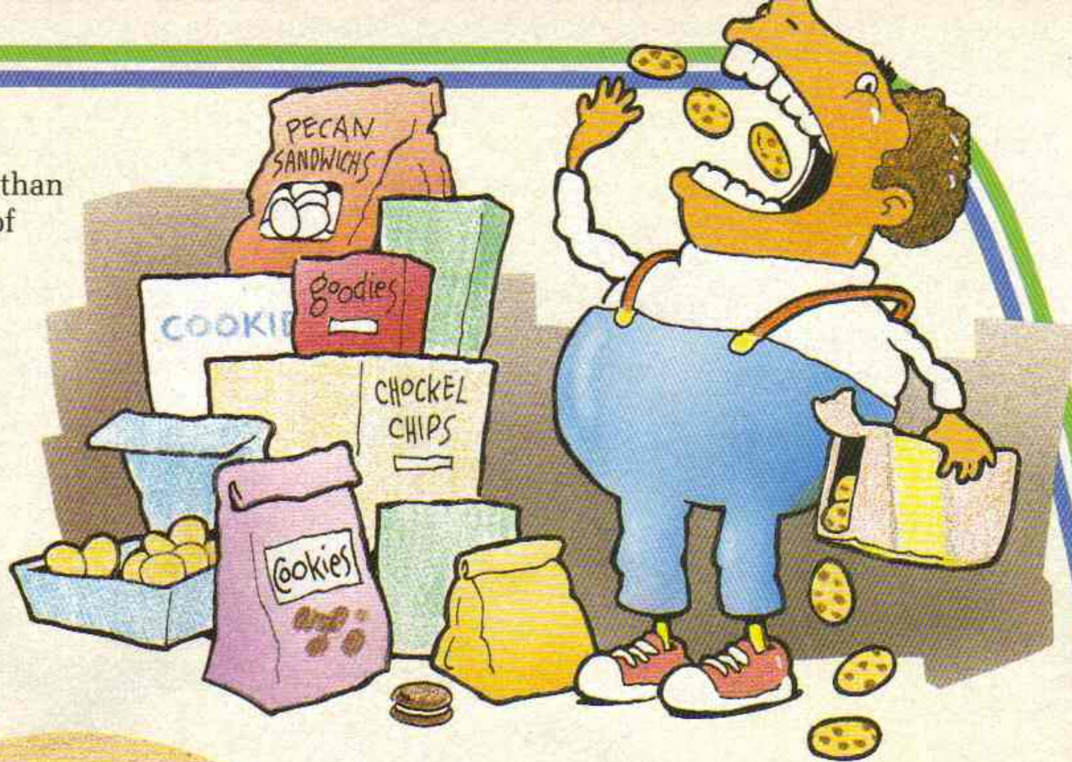
ILLUSTRATIONS BY CHARLES PEALE

On average, girls have a keener sense of smell than boys do.

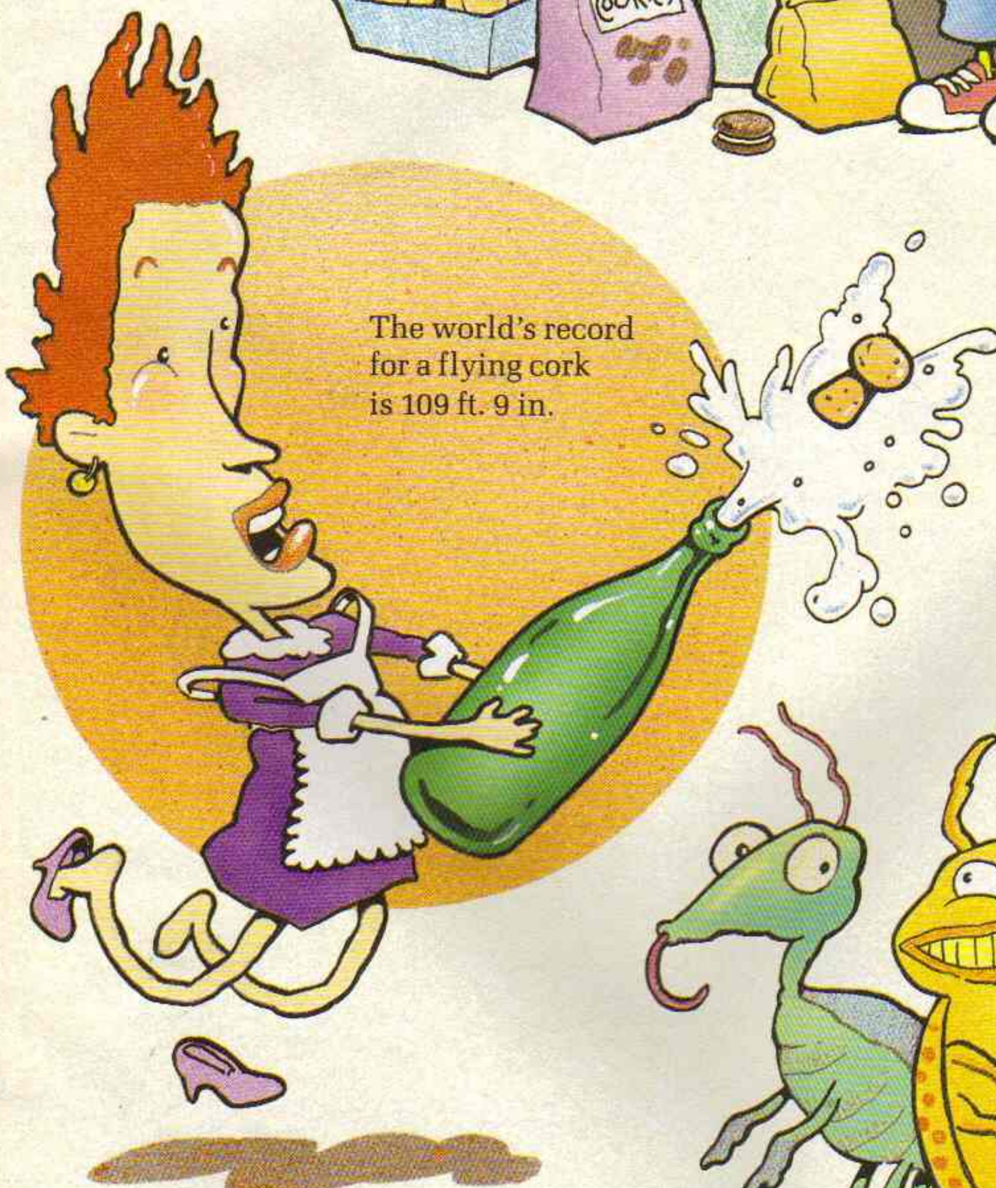
There are about 100 million television sets in the U.S.

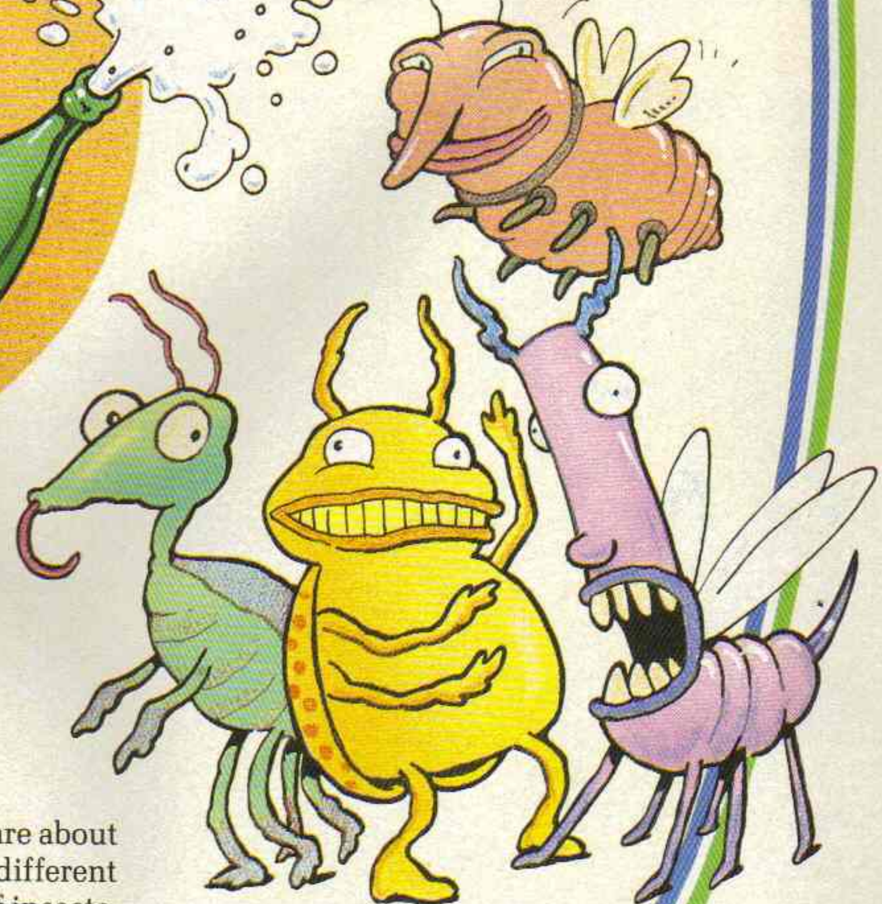


Americans eat more than
two billion pounds of
cookies per year.



The world's record
for a flying cork
is 109 ft. 9 in.





There are about
30 million different
species of insects.

Yellowstone National Park was burning. Last summer, flames swept through more than one million acres of Wyoming forest—about half the Park. It was one of the worst fires in U.S. history.

But scientists who study forests are not as worried about Yellowstone's future as you might think. For one thing, nature has its own way to repair damage. George Robinson, who works at Yellowstone, says that just *days* after flames scorched Yellowstone, fresh green grass shoots were poking up through the ashes.

Not only that, people like George Robinson believe that the fire may have done Yellowstone some good.

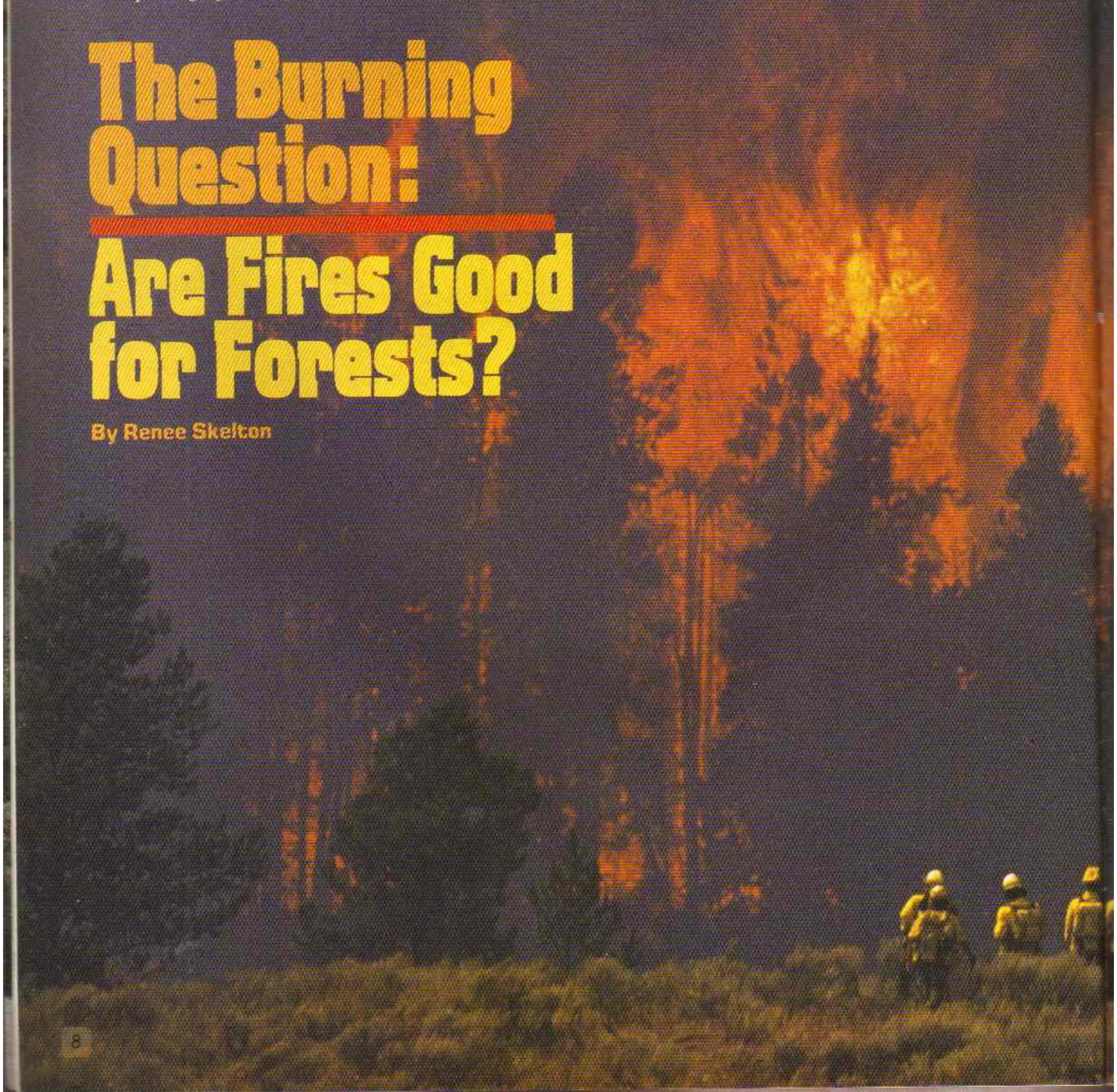
A Part of Nature

Most people don't think of fire as a good thing. In many ways it isn't. Fires can destroy buildings and harm people. Forest fires can kill animals. That's why park rangers urge people to be very careful—and not start fires!

But, Robinson says, fire plays a part in the natural system. Forest fires help clear away dead

The Burning Question: Are Fires Good for Forests?

By Renee Skelton



brush and old weak trees. That opens up the forest for young, healthy trees to grow.

In Yellowstone, there hadn't been a large fire in hundreds of years. Park officials worked hard to put out any fires that started. That allowed lots of dead pine needles, brush and dead branches to pile up on the forest floor.

Then, in 1972, the forest service decided to allow fire to play its natural role again. Some fires are started naturally—by lightning. If a fire started naturally and didn't threaten people or buildings, officials let it burn itself out.

Until last summer, this didn't cause a problem. But the 1988 fires got way out of hand. All that dead material on the forest floor made good fuel. The weather was very hot and dry. Once fires got started, high winds whipped up the flames. The fires raced along.

Thousands of people worked hard all summer to put out the blaze. But it was nature that finally did the job. The cooler, wetter weather of late summer and early fall got the fires under control.

Most people worried about what they would find when the flames died out. They were ➡

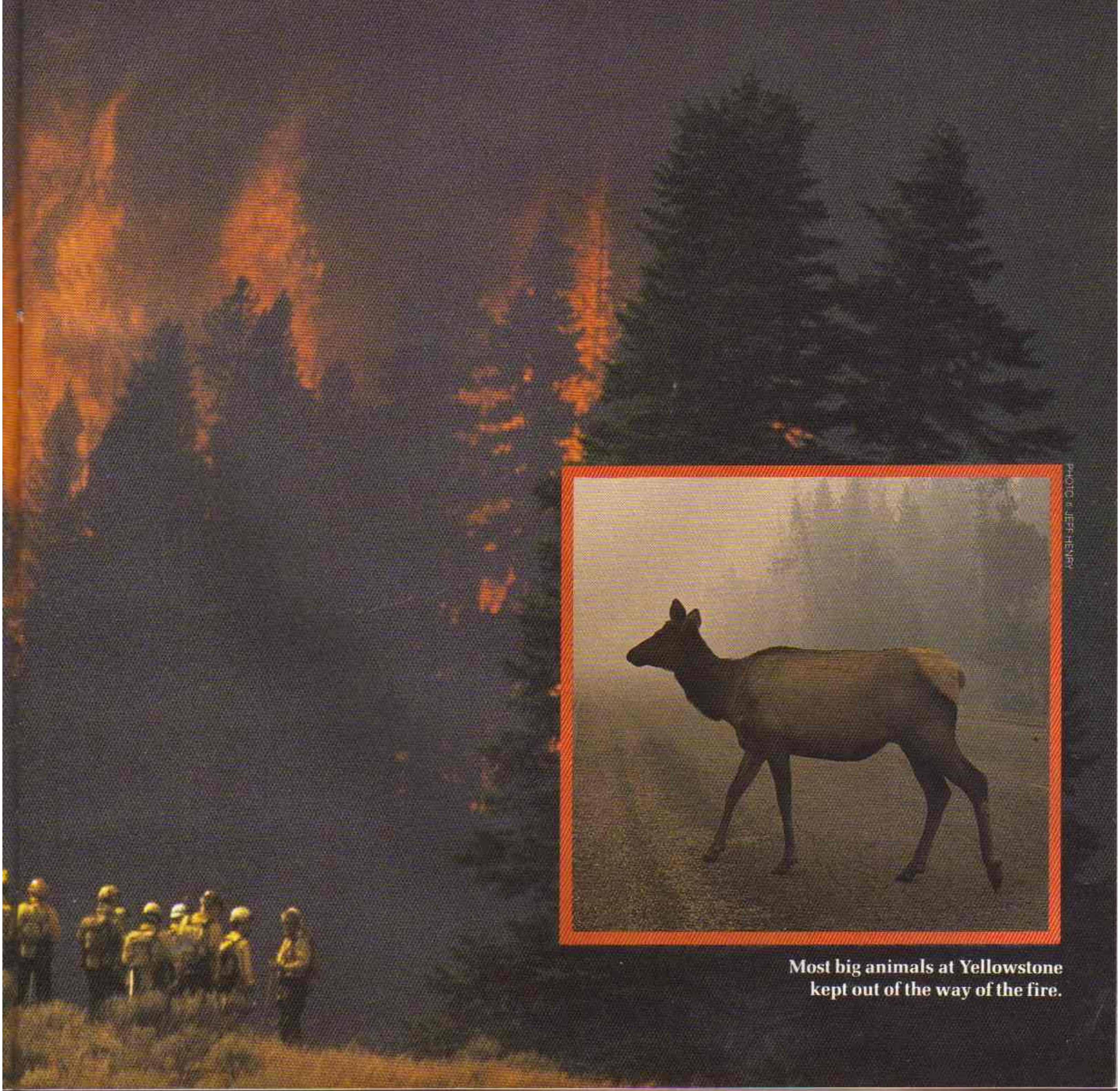
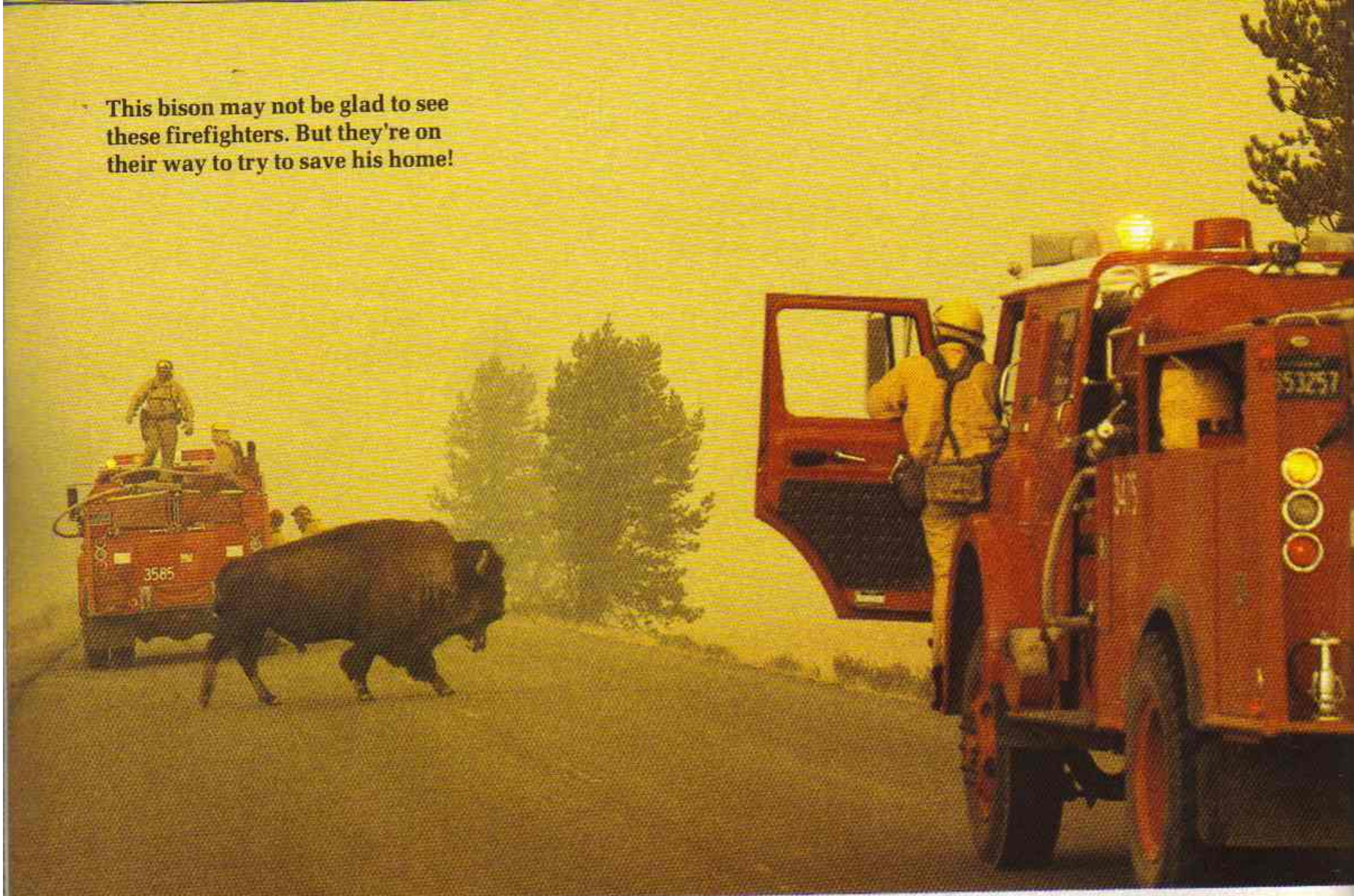


PHOTO © TED WOOD/PICTURE GROUP

PHOTO © JEFF HENRY

Most big animals at Yellowstone kept out of the way of the fire.



This bison may not be glad to see these firefighters. But they're on their way to try to save his home!

relieved by what they actually saw. The whole burned area wasn't blackened. The fire had zigzagged around. Burned patches sat next to patches that were still green and untouched.

Even in the worst areas, life continued. As Donald Despain, Yellowstone's chief biologist, told CONTACT, "Plants and animals have adapted to fire." They have ways to survive.

Animals Play It Safe

Some animals have homes that protect them. The fire doesn't reach many small animals, like mice and squirrels, that live in burrows below the ground.

Besides small animals, Yellowstone is home for larger animals, such as elk, bears, bison and bighorn sheep. These animals have instincts that help them get out of the way of the flames. Almost all of them survived last summer's fire.

Other animals, like woodpeckers, *benefited* from the fire. "They're awfully happy," says Despain. "All the killed trees will be attacked by insects. And the woodpeckers will have a feast. The hawks and owls are also real fat and happy." That's because a lot of the tree cover is gone. The birds can see better to catch the small animals that make up their meals.

That's good news for the hawks and owls, but bad news for the small rodents. In the fire these little creatures lost their hiding places. And they weren't the only animals who suffered. Red squirrels, for instance, were left with fewer lodgepole pine cones to eat. Many animals at Yellowstone had less food this winter. Plants they usually eat were gone.

The plants aren't gone for good, though. Plants have their own ways to survive fire. Lodgepole pine trees are a good example. All pine trees have cones. The cones open and release seeds that grow into new trees. But lodgepole pines have *two* kinds of cones. The regular cones release seeds. But the special cones are covered with a glue-like substance, a resin. The "glue" keeps the cones' scales stuck shut, with the seeds locked inside.

That is, until there's a fire. Fire burns the regular cones and destroys the seeds. But instead of burning the special cones, the fire's heat melts away the protective resin. So the cone scales pop open later and release their seeds. "That's how

PHOTO © JEFF HENRY

nature insures the lodgepole pine's survival after fire," Robinson explains.

There are many other ways that the environment protects itself. "The grass has living parts that are just below the surface that are not killed by fire," Despain says.

"Plants that come back after fire grow very well. They have less competition. The soil is warmer. And thanks to the ash, the soil is more nutritious."

Nature's Cycles

People go through stages of growth—from childhood to old age. So do forests and other natural systems. The lodgepole pine forests that burned at Yellowstone were old. When trees get old, they get weaker. It's easier for insects to attack them. And the trees get damaged more easily by storms—and fires.

Before last summer's fire, 80% of Yellowstone's forests were made up of lodgepole pines. "The lodgepole pines were all the same age and size. They were infested by insects," Robinson tells us. "This is not a healthy natural system."

For one thing, if an insect pest had come along that feasted on old lodgepole pines, it could have easily destroyed the whole forest.

"If you have many kinds of trees," Robinson continues, "the lodgepoles might go. But the rest of the trees would remain." Fire wipes the slate clean. It destroys the old weak forest. And it makes room for young, healthy trees of many kinds to grow.

In 40 years, the lodgepole pines starting out now will be about 15 feet tall. Their branches will start to grow together and shade the forest floor. Plants that cannot grow in the shade will again die out. Lodgepoles will take over almost completely.

In a few hundred years, the forest will be old and weak. Old needles and brush will again cover the forest floor. Another fire may sweep through Yellowstone to start the cycle all over.

Robinson explains the cycle like this. "Being at Yellowstone before the fire was like seeing the last act of a play that started many years before. Now people have the chance to see the first act."

No, Yellowstone will not be exactly as it was before. But stay tuned. It certainly will be an interesting show.





PHOTOS © JEFF HENRY

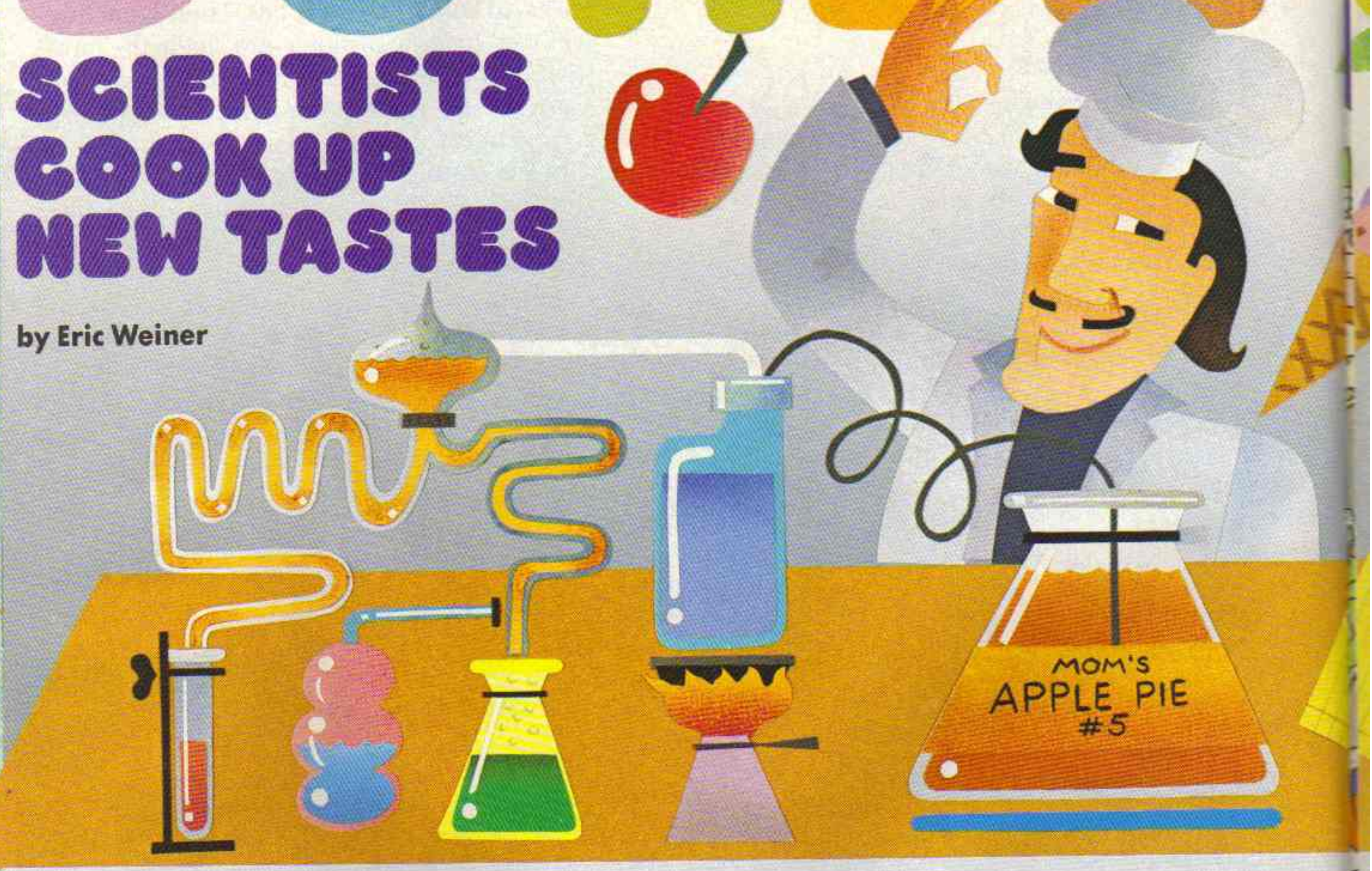
Above: In spite of the sign, this picnic area got badly burned.

Left: The forest is reborn! Just a few days after the fire, a young bull elk enjoys a meal of new grass.

DO MEA

SCIENTISTS COOK UP NEW TASTES

by Eric Weiner



Imagine a cook who spends weeks mixing up a glass of clear liquid. Finally it's done. He takes a sip, smacks his lips, and sighs, "Ah, now *that's* apple pie!"

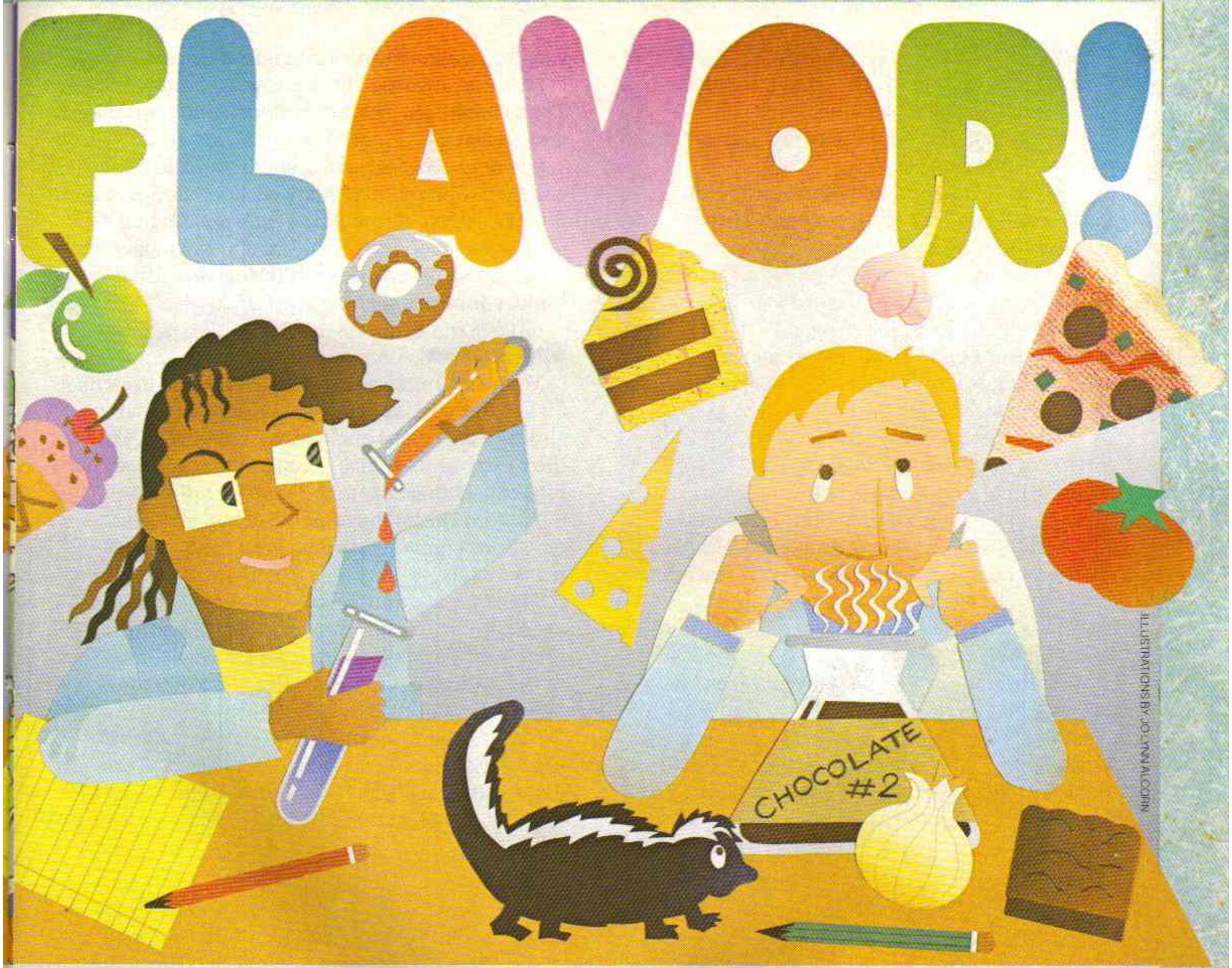
He's not kidding. The liquid does taste just like apple pie. That's because this is no ordinary cook. He's a flavor chemist—a scientist who uses a lab as a kitchen to cook up new tastes.

Artificial flavors—flavors made by a person instead of by nature—cost much less than natural flavors. Companies who make foods use artificial flavors to spice up almost every food product sold in the supermarket. To find out more about this modern-day, chemical "cooking," CONTACT went behind the scenes to look at the whole process—from the flavor lab to the taste-testing lab, right to your plate!

Copying Mother Nature

In a flavor chemist's lab, thousands of tiny amber-colored bottles line the walls. Each bottle contains a chemical with a different smell. Why? "Most of what we call 'taste' is really smell," explains Steve Lovis, the President of Flavor Technology, Inc.

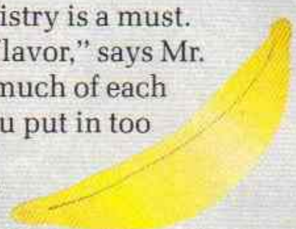
Steve's explanation is easy to prove. Pinch your nose tightly. Then bite into a piece of pizza (or a peach, or any other food). Since you can't smell it, the food will seem to have little taste. In fact, the tastebuds in your tongue can tell you



only whether food is salty, sweet, sour, or bitter.

A single taste may be made up of over a *thousand* different smells! So how do flavor chemists know what chemicals to mix? Thanks to new and better equipment, chemists have been able to identify more and more of the chemical ingredients in different foods. By trial and error, flavor chemists try to figure out which of these chemicals make up the food's taste.

Clearly, a knowledge of chemistry is a must. "If you're trying to make apple flavor," says Mr. Lovis, "you have to know how much of each chemical is in a real apple. If you put in too much of one chemical, your apple could turn into a cherry!"





P.U.

Since a flavor chemist works with smells, the lab can sometimes smell pretty bad. Frank Szpak is a flavor chemist at the International Flavor and Fragrance Company. "When you're mixing a chocolate taste," he told CONTACT, "the lab will sometimes have an onion stench. Then it will smell garlicky. And sometimes the lab will smell like skunk."

That skunk smell can get so strong that Mr. Szpak has to turn on the exhaust fan to blow it out. But when all these bad smells are combined, they become part of that familiar dark chocolately smell—an aroma almost everyone would agree is pleasing. ➡

Who Nose Best?

The flavor-maker's work is done. He or she has just concocted a new brownie taste. The flavor is mixed into brownie batter and baked. Who takes the first bite?

Most likely it's someone like David Kendall. Mr. Kendall is a taste-testing expert. He has been sniffing and tasting new products for 36 years. While most eaters just say "Yum!" or "Yuck!" experts like David Kendall can describe a smell or taste in great detail. Here's Mr. Kendall beginning to describe a taste of orange sherbet:

"Dry, tongue sting, bitter, sour, soapy, almost rubbery, vanilla, terpy..."



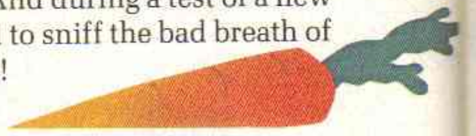
("Terpy" means the sting you get when you bite into an orange peel.)

How did Mr. Kendall develop such a special sense of taste? He used to practice with other taste-testers for hours. One person would take out three unlabeled bottles of smells. The other one would have to name each odor. Today, David Kendall can identify over a thousand different odors!

Learning to be a good taste-tester takes lots of practice. But there are some tricks. When tasting a lemony soda pop, for instance, testers first sip lemon juice. The intense lemon juice briefly tires out the tester's ability to taste lemon. So when they taste the pop, they don't taste lemon. That way they can taste the background flavors.

(Try this, it works! First sip some lemon juice. Then some 7-Up or other lemony soda pop. What do you taste?)

Eating sherbet, drinking soda—it sounds like a great job. But not all of Mr. Kendall's assignments are so pleasant. For instance, he's had to taste-test cat food. And during a test of a new mouthwash, he had to sniff the bad breath of hundreds of people!



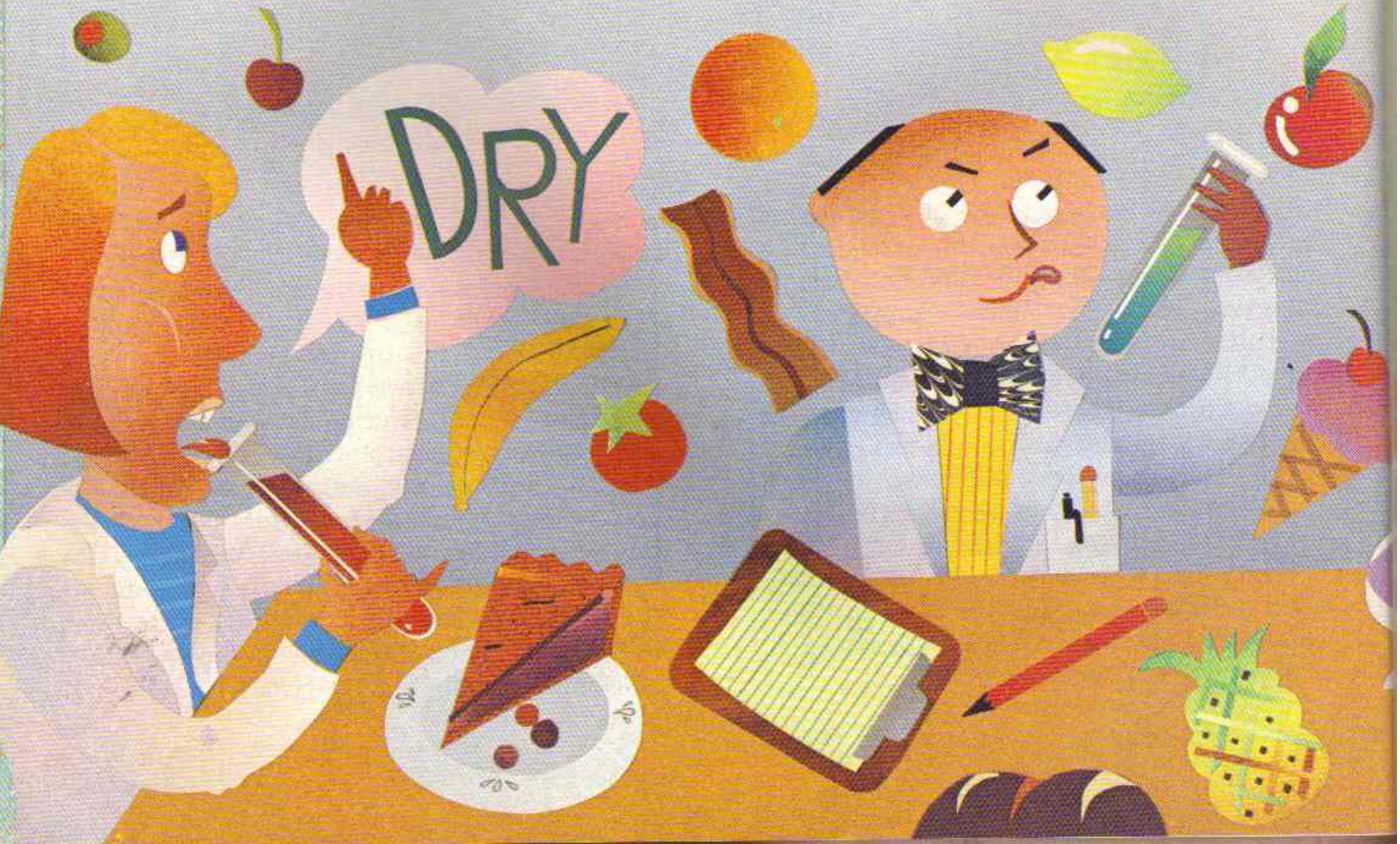
Snack Time

You're sitting in a tiny, windowless room. The air around you is odorless. Suddenly, a small sliding door opens and a tray is pushed in. On the tray is a brownie, a pencil, and a paper with a lot of questions.

Your job: Taste the brownie. Then answer questions such as, "Did the brownie have too many nuts?"

This may sound like a strange way to eat a snack. But at a taste-testing lab, it's standard practice. Companies hire taste-testing labs to find out what the public thinks of their new recipes.

Janet Curtis helps run the taste-testing lab at Firmenich Inc. in Princeton, New Jersey. She explained to CONTACT why everyone at a taste-testing lab tastes or sniffs alone.



"We don't want you to be able to see other people taking the same test. If you see someone eating a brownie and making a face, you might decide you don't like your brownie either!"

The results from testing labs help companies improve their recipes. But according to Ms. Curtis, to get accurate results one has to control the lab environment.

"We use a special filtered air system," Ms. Curtis told CONTACT, "to prevent air odors."

That's important because air odors change the way the food tastes. If the air smells like cabbage, the brownies may not taste so good.

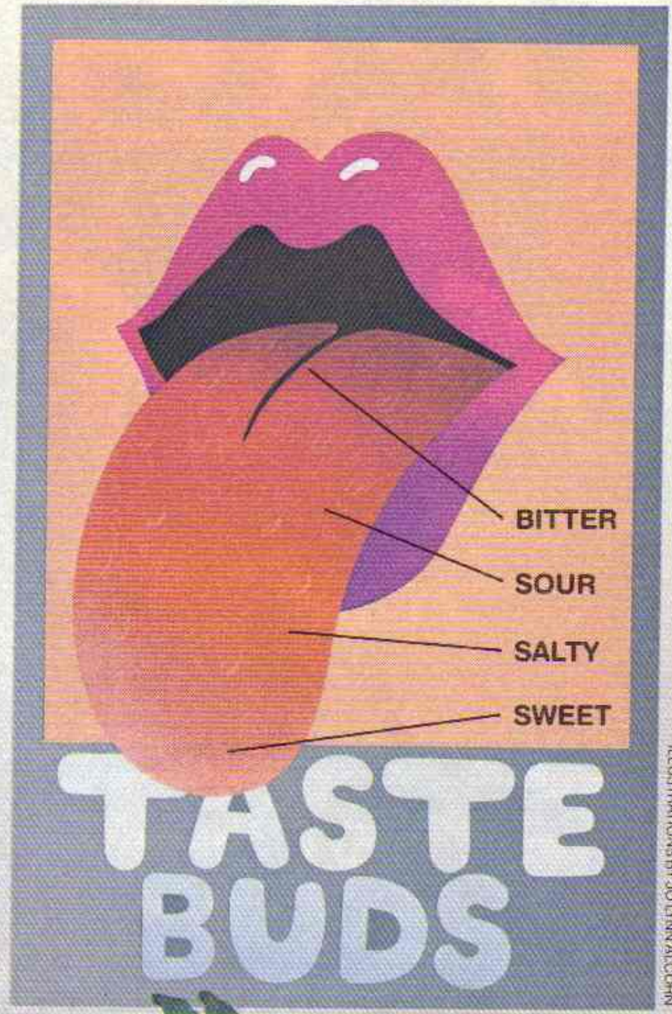
And what happens if the brownies do taste awful? "You always get a cup to spit the food into," says Janet. "You don't have to swallow it. But swallowing gives you more of the full flavor, because you smell the food better that way. So if



you don't swallow, we ask that you at least slurp."

Slurping passes air over the food and carries the smell up to the nose.

Of course, when a lot of people spit out the brownie, it may be time to change the recipe. That's why companies use the labs. They want to find out what works and what doesn't. They're hoping that when the brownie arrives in *your* kitchen, you'll slurp, swallow, and ask for more.



ILLUSTRATIONS BY JO LYNN ALCORN



BACK TO THE WILD

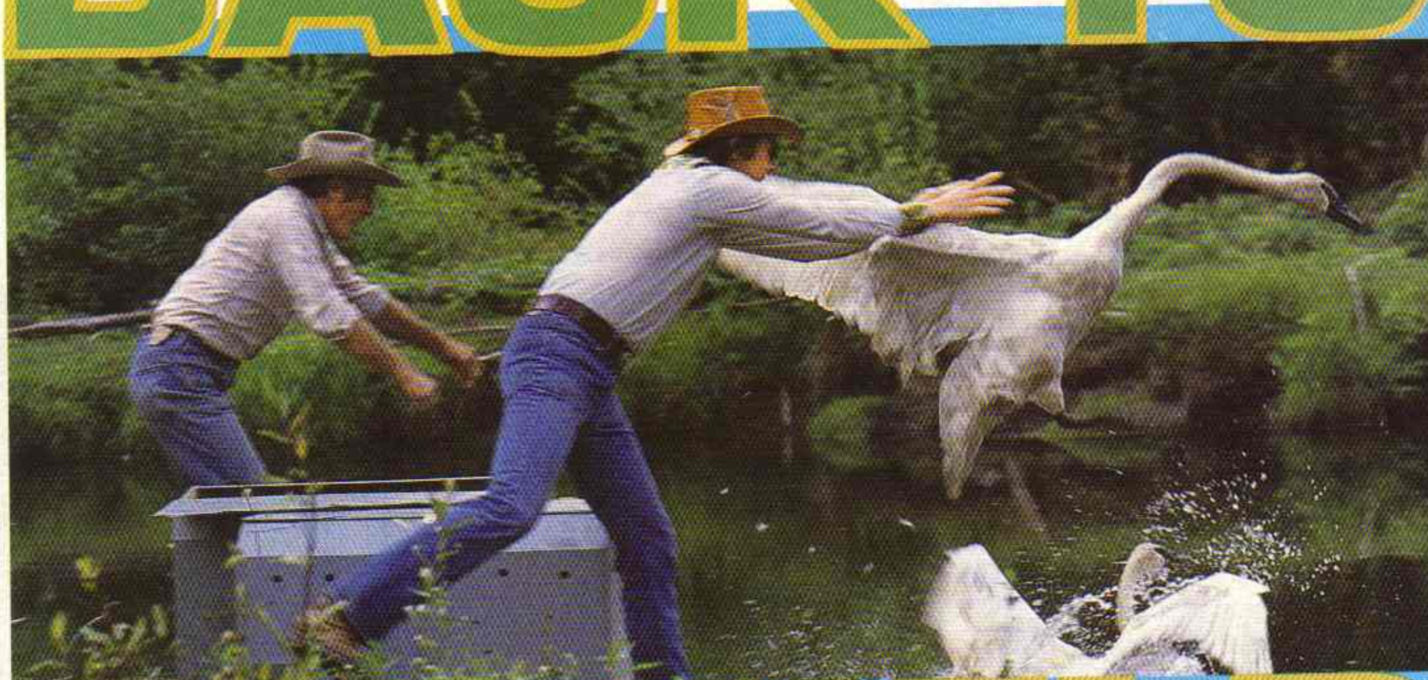


PHOTO © ANIMALS ANIMALS

PEOPLE RESCUE ANIMALS IN TROUBLE

by Elizabeth Keyishian

It was about 10 p.m. on a freezing, pitch black December night. The game warden's pick-up truck pulled into the Wildlife Center's driveway. In the back of the truck was one big, angry black bear.

The bear had been hit by a car. When the game warden found him, the bear was lying unconscious by the side of the road. The warden knew that the best place to take the bear was Ed Clark's place—the Wildlife Center of Virginia.

"That bear was definitely not unconscious when it arrived. It took us an hour to get him tranquilized," Clark told CONTACT. Then he treated the bear for shock and a bad bump on the head. When his "patient" was well, Clark released him in a nearby national park.

All across the U.S., there are wildlife centers like Ed Clark's. They rescue injured and orphaned wild animals—and try to make them better. Then, the animals are returned to the wild.

Most of the centers have a specialty. California's Marine Mammal Center helps whales and seals. The Raptor Center in Minneapolis, MN, helps birds of prey—eagles, hawks and owls. Florida's Suncoast Seabird Sanctuary helps seabirds—brown pelicans, herons and cormorants.

The people that help wild animals want to give them a fair chance at survival. After all, says Ed Clark, it's humans who cause most of the injuries. So it should be humans who help.

Rules of the Game

"You can't *ever* forget they are wild birds," Barbara Suto, of the Suncoast Seabird Sanctuary told CONTACT. "They have to stay wild in order to survive." That means as little human contact as possible. No cuddling, coddling, fussing over or spoiling these birds!

Keeping animals wild is one of the most important parts of what the wildlife centers do.

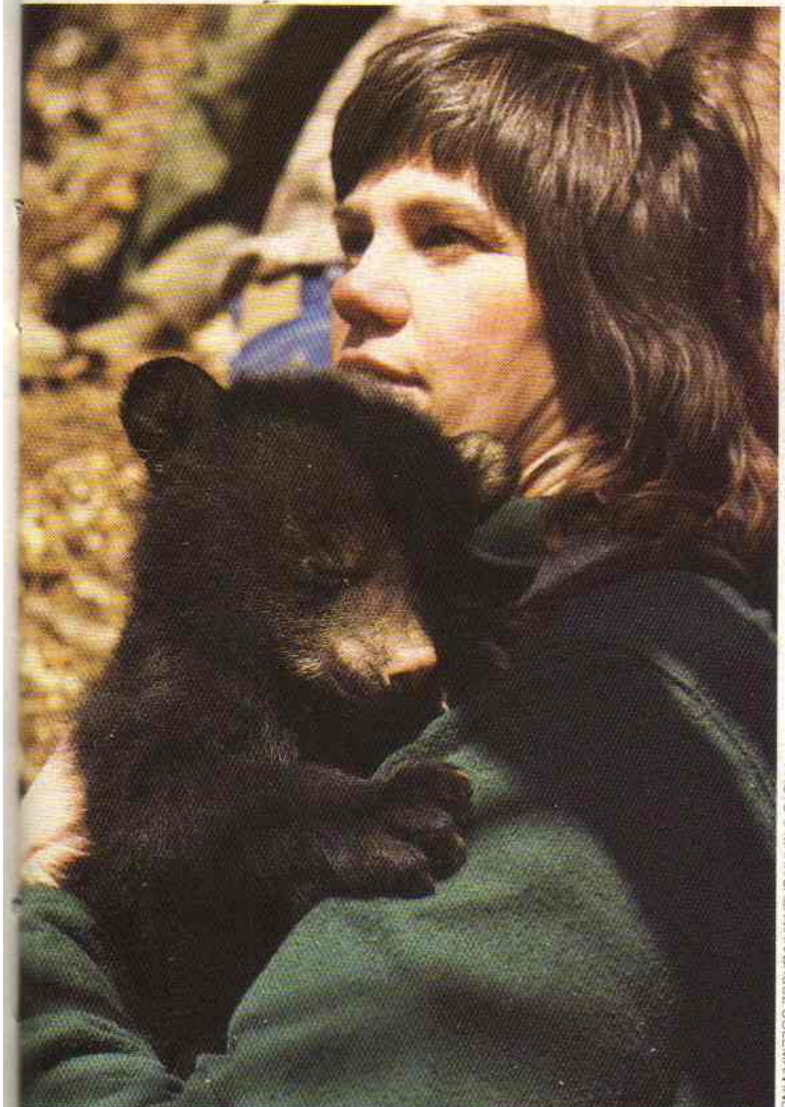


PHOTO © MARK SHERMAN/BRUCE COLEMAN INC.

"Once an animal is well enough to be eating, we put it into a pool with other animals," Jan Roletto of California's Marine Mammal Center told CONTACT. "They have to compete with the other animals for food, just like in the wild. When they're back in the wild, we don't want them coming up to people on beaches for a free handout."

The people who work in wildlife centers have one thing in common: They can't bear to see suffering animals. "This is not a hobby," says Gary Duke of the Raptor Center. "We are dedicated." That means long hours, some sleepless nights and learning as much as possible about how to care for wild animals.

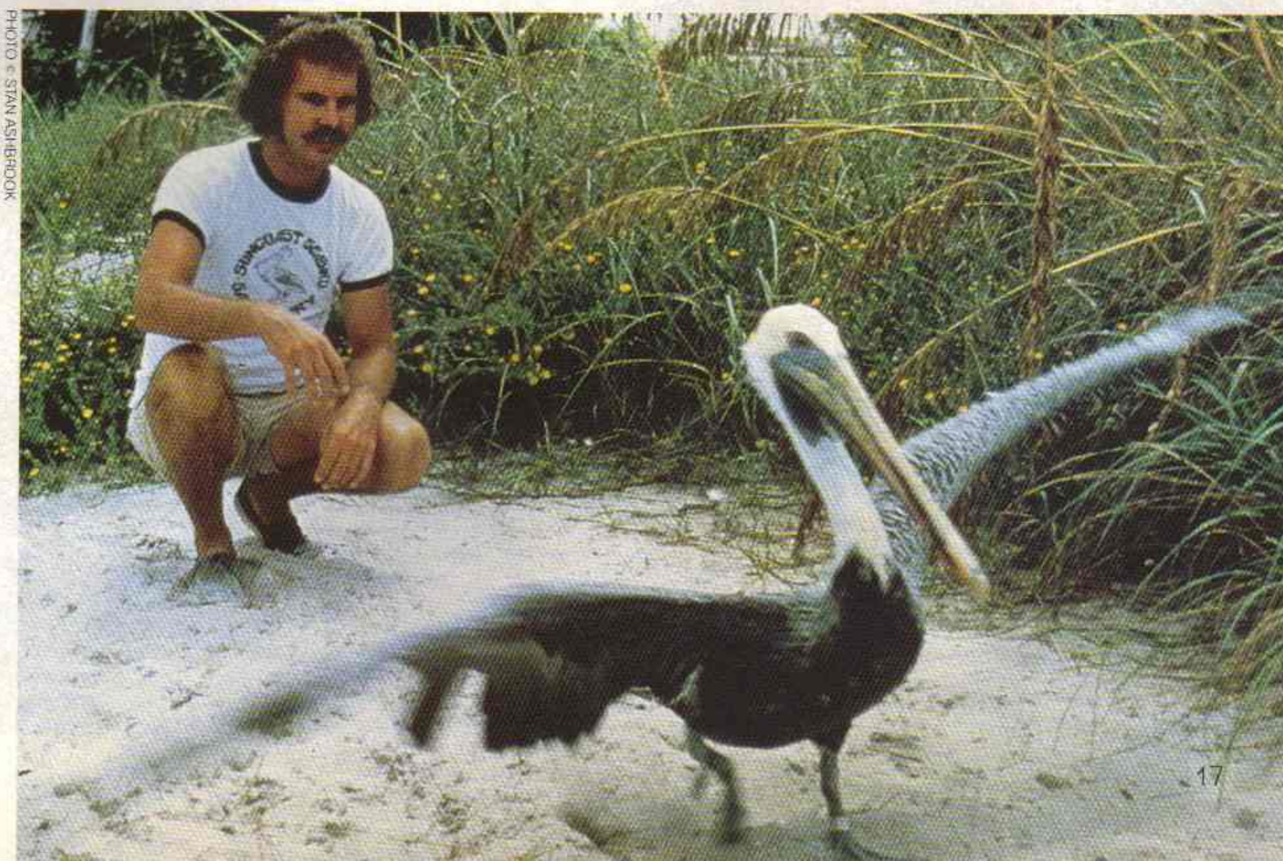
Step by Step

Most wildlife centers start out in somebody's backyard. A sick animal is brought home and nursed back to health—then another, and another. That's how most centers are born.

About 15 years ago, Ralph Heath of Indian Shores, Florida, spotted a cormorant (a type of seabird) with a broken wing struggling down the road. Ralph took the bird to a local vet who set the wing. Then, Ralph took the bird home and nursed it back to health.

After that experience, Ralph went out in his boat to look for other injured birds. There were plenty—usually brown pelicans that were tangled up in fishing lines or had fishing hooks stuck in their beaks. ➡

PHOTO © STAN ASHBROOK



Above: Rescuing orphaned animals, like this bear cub, is a big part of what wildlife centers do.

Right: Ralph Heath of the Suncoast Seabird Sanctuary releases a pelican after treatment.



PHOTO © MARY JANE SCHRAMM

Above: This seal pup waits patiently for release.

Below: It takes a lot of teamwork to rescue a stranded white whale.



PHOTO © BOB & CLARA CALHOUN/BRUCE COLEMAN INC

Word spread fast about Ralph Heath, the bird doctor. Soon, people were dropping off wild birds that had been injured. Heath had to build big pens to house all the new arrivals. What started as a backyard hospital for a few birds became Florida's Suncoast Seabird Sanctuary. Though Ralph is not a veterinarian, there are several local vets who help. And there are about four full-time helpers and lots of volunteers.

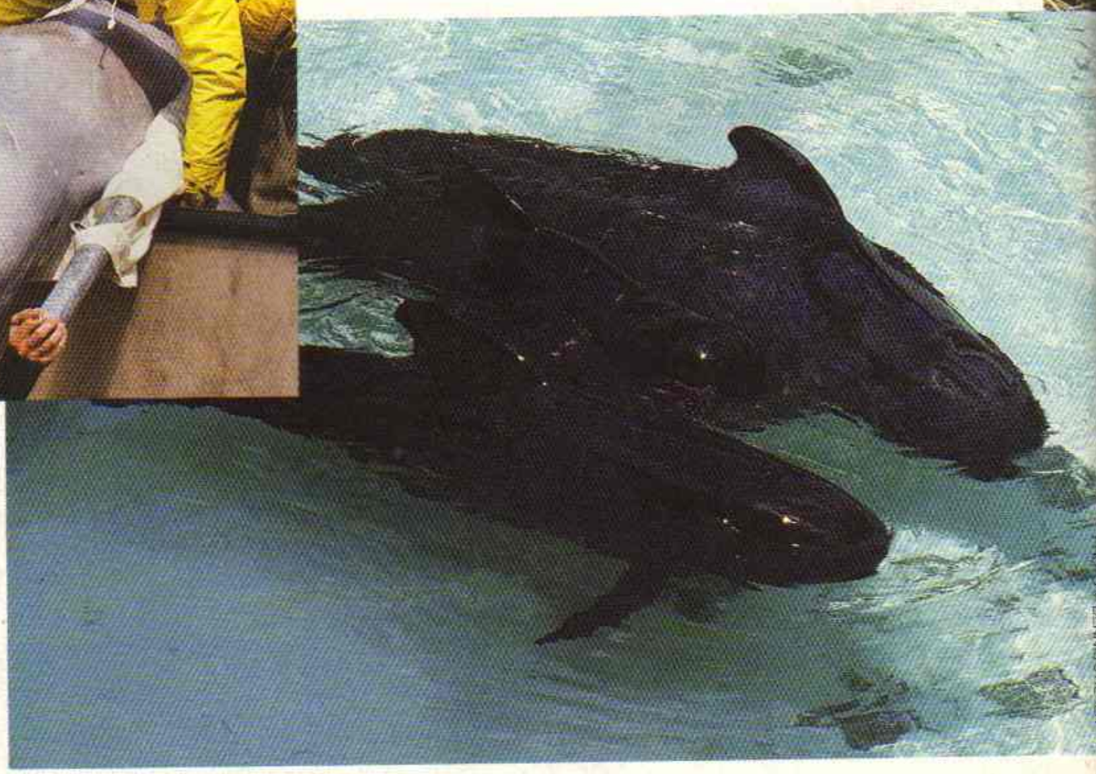
Sometimes an animal cannot be returned to the wild. "Gabriella" is a red tail hawk. She was shot by a hunter and blinded. She could not survive in the wild, so she became a permanent resident at the Suncoast Seabird Sanctuary.

People can get close to Gabriella and look at her and learn about birds. "We can spoil the permanent resident birds because they won't be going back to the wild," says Barbara Suto, one of the workers at the sanctuary.

Another of the permanent residents is Patty the Pelican. Although she cannot fly, she hatches and raises babies. Brown pelicans are in danger of dying out. So, Patty does her part to help by raising brown pelican babies to be released into the wild. "When the babies are ready to leave, we open up the roof and the babies fly away," says Barbara Suto.

Whale of a Time

There's a *big* difference between rescuing a pelican and rescuing a stranded whale. You



Right: Tag, Notch and Baby were three pilot whales rescued by the stranding center at the New England Aquarium.



PHOTO © STAN ASHBROOK

can't wrap up a hurt whale in a blanket and carry it home.

In 1986, a whole herd of pilot whales stranded themselves on a beach near Cape Cod, MA. Some were still in the shallow water when Greg Early and his team arrived from the New England Aquarium Stranding Center. "We try to turn whales around and give them a shove in the right direction," Early told CONTACT. "But they are wild, they are big, and in this case, they are frightened and upset. You have to be careful."

Early and his group were able to move three young pilot whales back to the Aquarium. "We used big stretchers. It takes about 15 people to lift them."

The three whales were named Tag, Notch and Baby. When the whales were ready to be released, radio tags were attached to them. "We wanted to track them to try to learn where they go and what they do," says Early.

Once in a while, animals decide they'd rather live with humans than live in the wild. Nelson the sea lion had been a patient at the California Marine Mammal Center. He must have liked the free meals because after he was set free, he stranded himself on a beach down the hill from the Center. Nelson was rescued and returned to the water. Then, he stranded himself again. "He managed to haul himself up the beach, climb the stairs of somebody's beach house and fall asleep on the couch," says Mary Jane Shramm, who works at the Center.

Nelson was given a permanent home in Ocean World in Florida. He obviously likes being with humans. "He's a real party animal," Mary Jane told CONTACT.

Above: Many of the wildlife centers also have breeding programs. This baby pelican was hatched at Suncoast Seabird Sanctuary.

Right: The most exciting part of rescue and treatment is returning an animal to the wild.

PHOTO © FRED WHITEHEAD/ANIMALS ANIMALS




Colgate
TO
OR C
START
HOW TO PLAY
PLACE GAME PIECES ON START. ROLL DICE AND MOVE YOUR GAME PIECE. IF YOU LAND ON A "TRUE OR FALSE SQUARE," ANSWER THE QUESTION, AND THEN CHECK YOUR ANSWER. IF IT'S RIGHT, ROLL AGAIN. IF NOT, YOUR FRIEND ROLLS. LAND ON A "PICTURE SQUARE," AND YOU LOSE A TURN. WHOEVER REACHES THE END FIRST, WINS!
1. COLGATE JUNIOR IS MADE JUST FOR KIDS.
T OR F
2. RINSING YOUR MOUTH WITH WATER IS AS GOOD AS BRUSHING.
T OR F
3. PLAQUE IS MADE OF HARMFUL, STICKY INVISIBLE GERMS WHICH FORM IN YOUR MOUTH.
T OR F
YOU DIDN'T BRUSH AFTER EATING SWEETS! BACK 1 SPACE.
4. TO BE SURE YOU CLEAN YOUR TEETH WELL, YOU SHOULD REPLACE YOUR TOOTHBRUSH EVERY 1–3 MONTHS.
T OR F
5. JUST A FEW SECONDS BRUSHING IS ALL YOU NEED TO CLEAN YOUR TEETH.
T OR F
6. THE COLGATE JUNIOR TOOTHBRUSH IS ONLY FOR FUN.
T OR F
OOPS!
YOU RAN OUT OF TOOTHPASTE! BACK 1 SPACE.
7. FLUORIDE IS SOMETHING IN TOOTHPASTE THAT HELPS PREVENT CAVITIES.
T OR F
8. YOU ONLY NEED TO HAVE YOUR TEETH CLEANED BY YOUR DENTIST OR HYGIENIST ONCE A YEAR.
T OR F
9. COLGATE JUNIOR IS THE ONLY
YOU FO BRUSH BEDTI BACK 1 SP
A
B
C
SIMPLY CUT DICE WITH SCISSORS. FOLD ALL TABS ALONG DOTTED LINE. THEN TAPE #1 TO TAB A, #2 TO TAB B, AND #3 TO TAB C. (NOW YOU'RE READY TO ROLL!)
ANSWERS
5 · FALSE–YOU SHOULD SPEND AT LEAST 1 MINUTE BRUSHING TO GET TO ALL SURFACES OF YOUR TEETH.
6 · FALSE–THE COLGATE JUNIOR TOOTHBRUSH WORKS GREAT AND IS FUN TO USE.
7 · TRUE – THAT'S WHY COLGATE JUNIOR HAS FLUORIDE.
8 · FALSE–AT LEAST TWICE! 9 · TRUE 10 · TRUE
11 · TRUE – SO BRUSH ALL THE SURFACES OF YOUR TEETH.

ADVERTISEMENT





The Bloodhound Gang

Attack of the Computer Virus

By Becky Cheston

ILLUSTRATIONS BY BOB PEPPER

To be heard over the roar in the factory, the tour guide almost had to shout: "As you can see, this is where we mix the fruit!"

He pointed to a row of what looked like huge washing machines. Inside each machine, purple glop churned wildly.

"Wow!" said Ricardo. "That's more juice than even *I* could drink!"

The Bloodhound Gang was celebrating Ricardo's birthday. At his request, Vikki and Skip were treating him to the famous tour of the Fizz Fruits automatic soda pop factory.

"Like everything at our company," the guide continued, "these machines are run by our central computer. The computer controls the assembly line, the elevators, even the lights."

Vikki glanced at one of her fellow tourists, a woman in a yellow dress. She was carrying a newspaper, which she now raised slightly. Vikki saw a flash of chrome.

She nudged Skip. "I know we're supposed to be off-duty. But I think the woman in the yellow dress has a hidden camera."

"What?" Skip yelled.

"As you can see," called the guide, "here is where the bottles get filled. This nozzle—"

He didn't finish the sentence. The conveyor belt had stopped abruptly. Instead of spraying raspberry juice into a bottle, the machine sprayed it all over the guide.

Then the conveyor belt started moving so fast that the glass bottles all crashed together. Fruit juice began spraying everywhere. As the tourists scrambled for cover, Vikki looked for the woman in the yellow dress. She had left the group and was making her way towards a door marked "EMPLOYEES ONLY."

Vikki followed.

Food Fight!

Juice rained down as workers ran around trying to stop the machines. Skip and Ricardo crouched down behind the conveyor belt. "Where's Vikki?" Ricardo yelled over the din.

"Don't ask me," moaned Skip. He was trying to wipe the fruit pulp from his glasses. "I can't see a thing."

Just then, the lights went out. Then they came back on. Then they went off again.

"Some birthday party," yelled Ricardo. "Say,

what did the guide say? The whole building is run by a central computer, right?"

"So?" asked Skip.

"So you're the computer whiz. Let's check out the computer."

"I'll show you were it is," called a voice.

The lights came back on again. Ricardo looked up and saw a 15-year-old girl, who had also been taking the tour. Her blonde hair was speckled with raspberries. "I'm Tiffany. My Uncle Mel works here," she shouted. "I know my way around."

"Great," said Skip. "Let's go!"

Shadowing a Spy

Meanwhile, the woman in the yellow dress was quietly making her way down an office-lined hallway. She stopped at a door marked "Flavor Formulas" and tried the door. It was locked. Glancing around, she took a long shiny tool out of her purse—a pick.

Once she had picked the lock and gone in, Vikki stepped out of the shadows at the end of the hall. She tiptoed towards the office. The door hadn't closed all the way. She peered through the crack.

Inside the room were rows of large file cabinets. The woman was kneeling in front of an open file, taking pictures.

"I'm no photographer," said Vikki, pushing open the door. "But I don't think those files make for much of a picture."

The woman stood up very quickly, dropping the papers she was holding. Then the room went pitch black. And when the lights came back on, the woman was gone.

Computer Catches Cold

Spattered with gobs of fruit, Tiffany, Skip, and Ricardo hurried through Fizz Fruits' executive offices. Here no fruit juice was spraying. But there was plenty of confusion. Workers were yelling that their computer terminals were going haywire.

Inside the computer room, computer operators huddled around one printer, poring over a systems check. Skip and Ricardo introduced themselves as detectives. "I think your computer may have caught a virus," said Skip.

"I beg your pardon?" asked Marge Bell, head of computer operations.

"A *computer* virus," Skip went on. "That's a software program that enters a computer, takes over its operations, and gives the computer its own instructions."

Tiffany laughed. "I don't know anything about computers," she said, "but I never heard of a machine catching a cold."

"Right," said Ricardo. "What are we supposed to do? Feed the computer chicken soup?"

Ignoring them, Skip asked Marge, "How many terminals feed into this central computer?"

"About twenty," said Marge. "They're all in the main offices."

"Then the virus had to enter through one of those terminals. Do you have any modem link-ups with outside computers?"

"Sure," said Marge, "we've got phone link-ups with university computers, and science centers all over the nation. What does that—"

But Skip was already running out the door.

The Virus Spreads

"Say, Tiffany," a man called out as she and Ricardo followed Skip back into the main office. "Before the system crashed, I made it to asteroid level on that new game you programmed for me. And I only started playing it this morning!"

"Excuse me!" yelled Skip. He had climbed onto a desk. "If I could have your attention..."

When the stunned office workers quieted ➡





ILLUSTRATION BY BOB PEPPER

down, Skip said: "Please do not use your modem phones. It's very important! A virus has entered the system. If you telephone an outside computer, the virus could spread."

Bang! The office door slammed open. In marched a large man in a three-piece suit. He was trailed by several men and women in security uniforms. "And just what do you think you're doing?" he demanded of Skip.

"I'm a detective from the Bloodhound Gang. I'm trying to figure out what went wrong with your computer."

"Well, I'm Roger Kline, the President of Fizz Fruit!"

The door burst open again, and Vikki raced in. "Skip!" she yelled. "A woman...pictures...got away...elevator...."

"Now who's this?" boomed Kline.

"Another detective," said Skip, hopping down from the desk. Vikki was totally out of breath. But she managed to explain about the woman in the yellow dress. With Vikki leading the way, the Bloodhound Gang raced back out the door. Kline and the security guards followed.

It turned out that the woman in the yellow dress was stuck in the computer-run elevator.

"You don't have to punish me," the woman said, when they finally managed to open the elevator door. "I've already had enough punishment for a lifetime. This elevator has been zipping me up and down like crazy."

"Roseanne," gasped Kline. "How could you?" The woman in yellow was Kline's ex-wife. Now head of a rival soda pop company, she had been trying to steal some of Kline's trade secrets. "But I didn't touch the computer," she said.

"That's probably true," grumbled Kline. "Neither of us know anything about computers."

"Then we're back to square one," sighed Skip.

"Not at all," said Ricardo. "I just gave myself a wonderful birthday present. I figured out who's the computer culprit."

STOP—BEFORE READING ON, CAN YOU NAME THE CULPRIT?

A Dangerous Prank

"You program games for your Uncle Mel," said Ricardo, turning to face Tiffany. "So why did you say you didn't know anything about computers?"

"Know nothing about computers?" gasped Kline. "Are you kidding? Tiffany's dad is one of the top computer experts in the country."

"Hmm," said Skip. "If Mel loaded Tiffany's game disk into his terminal, the virus could have written itself into the computer's operating program."

Tiffany turned and started to run. A security guard caught her. She confessed that her virus was programmed to travel through the Fruit Fizz computer network, scrambling files in its wake. "I just wanted to see if I could do it," she said.

"You've caused a lot of damage," Mr. Kline told her. "I'm going to call the police to arrest Roseanne. I'm afraid we're going to have to turn you in, too."

"Hey," said Tiffany, "it was just a prank."

"A very expensive one," said Mr. Kline.

"And if someone had used their modem, it could have spread to other computers," added Skip. "And caused even more damage."

When the police arrived, they took Tiffany to the computer room so she could straighten out the program. Mr. Kline, meanwhile, led the Bloodhound Gang to his office. He served them ice cold raspberry Fizz Fruits.

"Ah," said Ricardo, taking a swig. "This goes nicely with a computer bug."

"How's that?" asked Kline.

"Bug juice!"

Watch for next month's Bloodhound Gang!

TUNE IN TO SQUARE ONE TV ON YOUR LOCAL PBS STATION

WHO'S TALLER?

Can you rank these five stars by height, from tallest to shortest? Careful, the photos won't help you—because we mixed up all the sizes!

Speaking of size, this month's Square One section is filled with measurement puzzles and games. It's pure measure pleasure! If you're stumped, turn to the Did It! page.



MONTAGE BY AL NAGY

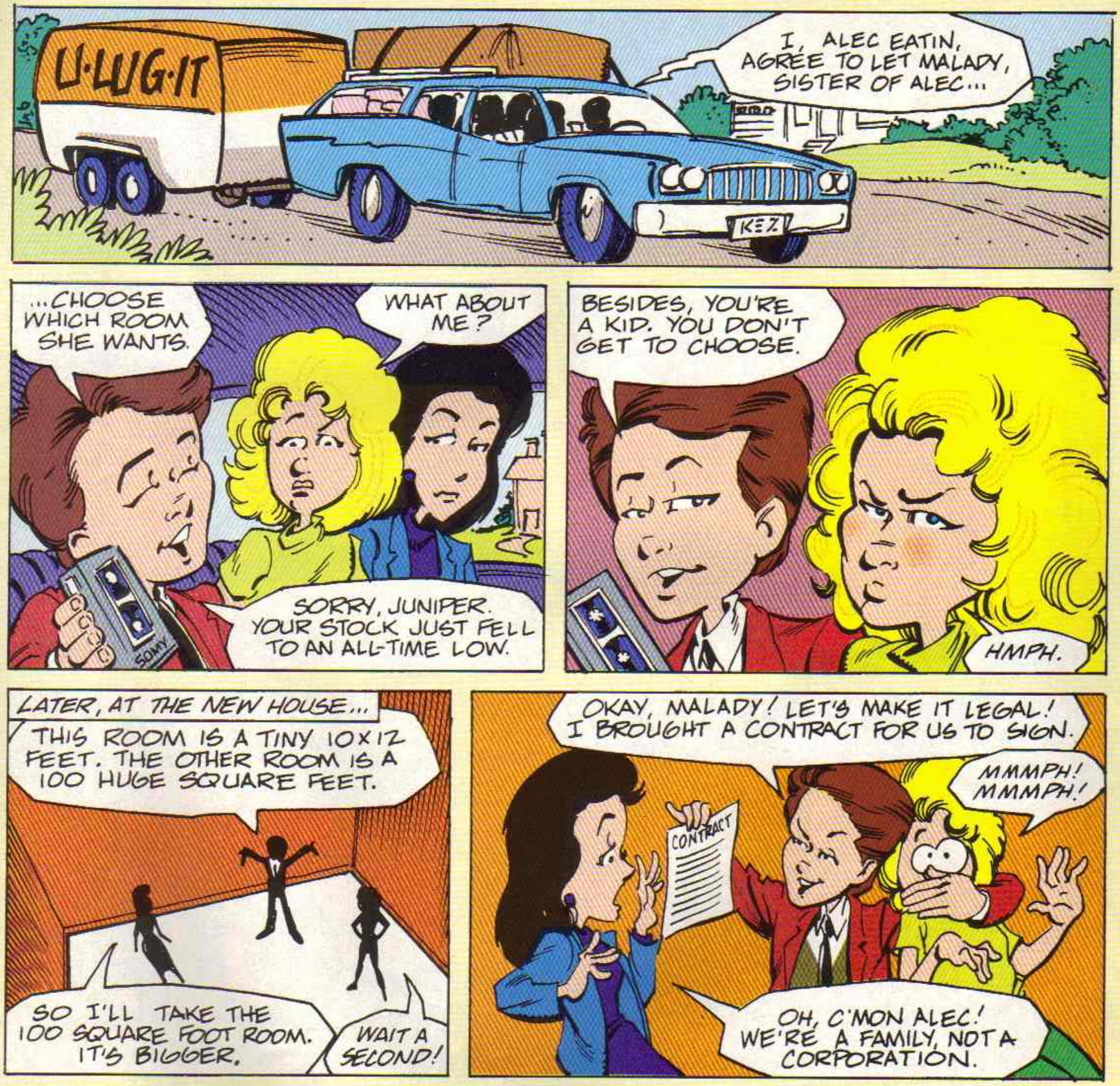
PHOTO © PHOTO FANTASIES

PHOTO © 1988 MARK WEISS/MWA

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PHOTO © 1988 UNIVERSAL CITY STUDIOS, INC.


SQUARE ONE Television
Family Size
THE EATIN FAMILY IN A SQUARE ONE PUZZLE
STORY: ELIZABETH KEYISHIAN
ART: KEITH WILSON
I CAN'T BELIEVE WE'RE MOVING OUT OF THIS HOUSE!
I MEAN, IT'S LIKE THIS HOUSE IS ME. HOW CAN WE MOVE OUT OF ME?
IF THIS HOUSE IS YOU, MALADY...
...THAT MEANS THERE'S A LOT OF ROOM UPSTAIRS.
SPEAKING OF ROOMS UPSTAIRS, I ALMOST FORGOT...
...WE'VE GOT TO CHOOSE WHICH ROOMS WE GET IN THE NEW HOUSE.
I TOOK CARE OF THAT ALREADY.
WHA-A-A-T?
I MEAN, I'M A COLLEGE MAN NOW. I NEED ROOM FOR MY COMPUTER, MY STOCK MARKET GUIDE, MY ELECTRIC UNDERWEAR SORTER...
SO ALEC, WHICH ROOM IS YOURS?
TELL US, OR I'M GONNA TELL MOM AND DAD TO MAKE SOY BURGERS FOR DINNER.
NO, PLEASE! ANYTHING BUT SOY BURGERS. ON SECOND THOUGHT, I'M WILLING TO MAKE A DEAL.





PUZZLE: MALADY GOT THE ROOM THAT'S 10X12 FEET. ALEC GOT THE ROOM THAT'S 100 SQUARE FEET. WHICH ROOM IS BIGGER?

HINT: *THE AREA OF A ROOM IS MEASURED IN SQUARE FEET. JUST MULTIPLY LENGTH TIMES WIDTH (10X12) TO FIND THE AREA OF MALADY'S ROOM.*

*ANSWER ON THE **DID IT!** PAGE.*

SQUARE ONE Television

FIND FOOGOO

Zooperay!
It's time for the annual field day on Planet Gorsh. Noggles and Swarbs have come from all over Gorsh to take part. Your job? Find Foogoo, the referee!
HINT: He's *measuring*.
Answer on the Did It! page.

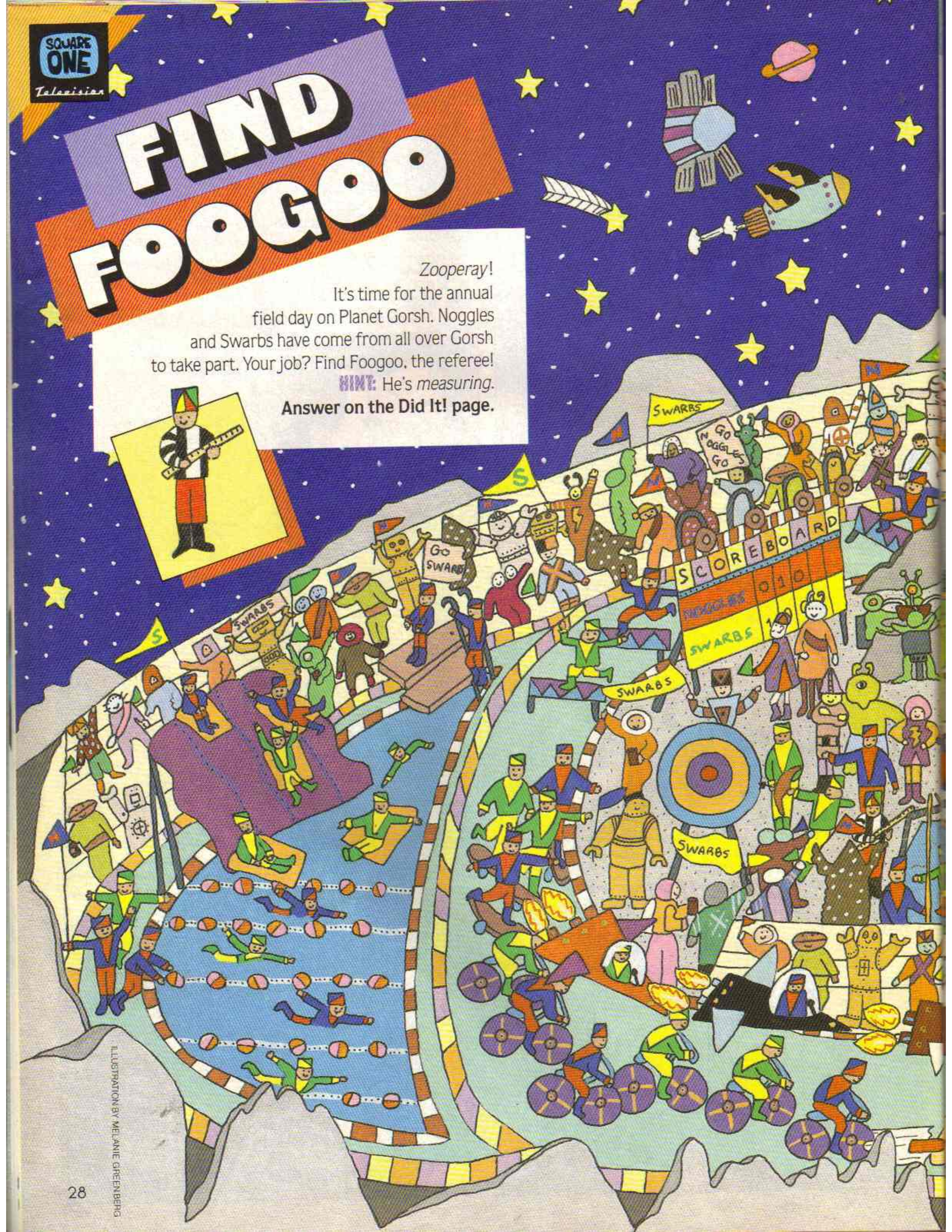
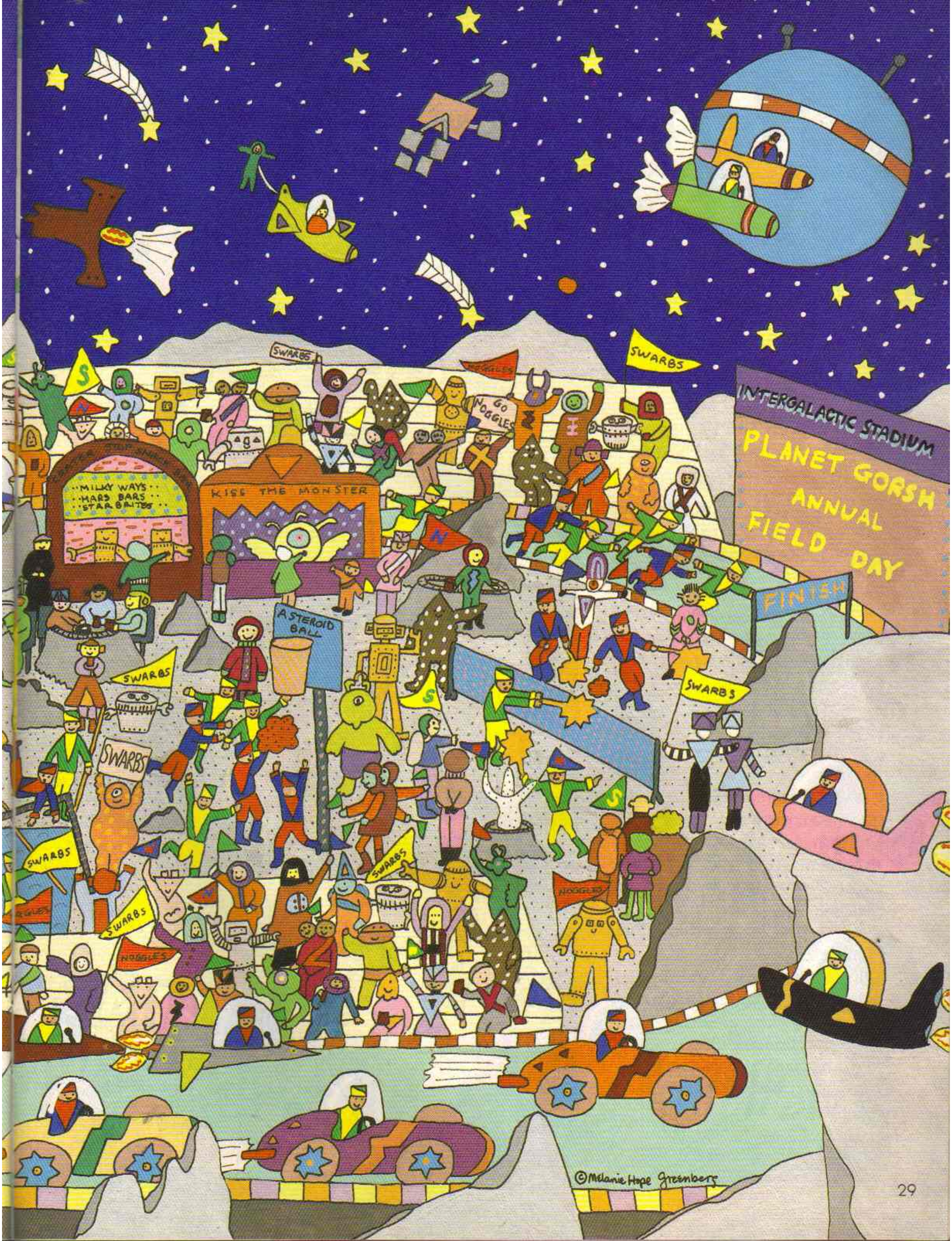


ILLUSTRATION BY MELANIE GREENBERG


INTERGALACTIC STADIUM
PLANET GORSH ANNUAL FIELD DAY
FINISH
SWARBS
NOGGLES
GO NOGGLES
MILKY WAYS
MARS BARS
STAR BRITES
KISS THE MONSTER
ASTEROID BALL
©Melanie Hope Greenberg

TIME OUT!

A SQUARE ONE BOARD GAME FOR 2 OR MORE PLAYERS

Can you measure time without a clock? Play this game and find out!

WHAT YOU'LL NEED:

One die, a coin or bottlecap for each player to use as a marker, and a watch with a second hand.

HOW TO PLAY:

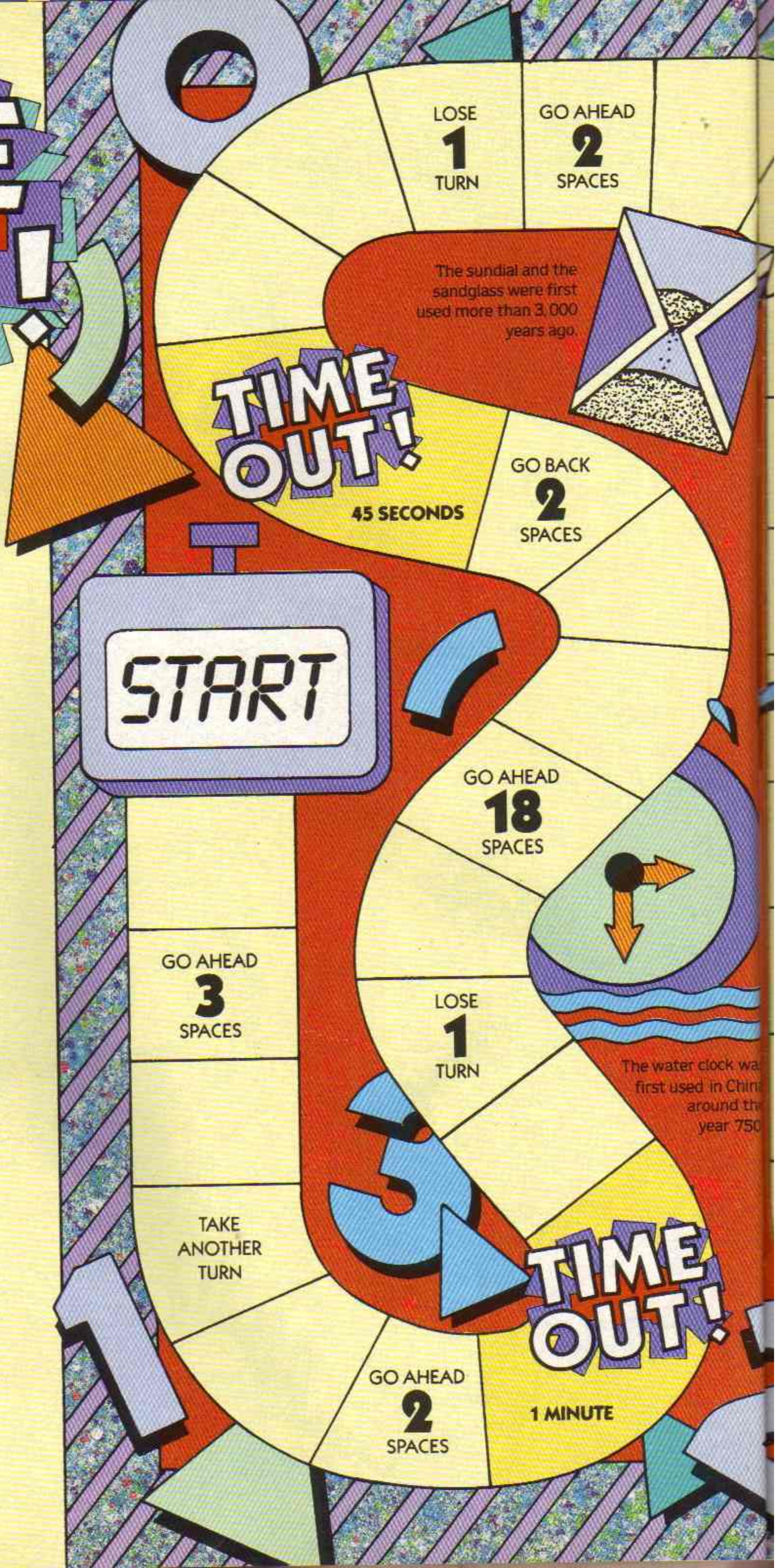
Place your markers on the START space and roll one die. The person who rolls the highest number goes first.

Each turn, roll the die and move forward that many spaces. Follow the directions on the space where you land.

If you land on a TIME OUT space, read the amount of time that is written in that space. You must try to guess when that much time has passed. Have another player use the watch and tell you when to start. When you think the time is up, say "Time out!"

If you guess within five seconds of the correct time, you may move forward five spaces or send any player back ten spaces. If you miss the correct time by more than five seconds, you must move back ten spaces.

The first player to reach the FINISH space wins the game.



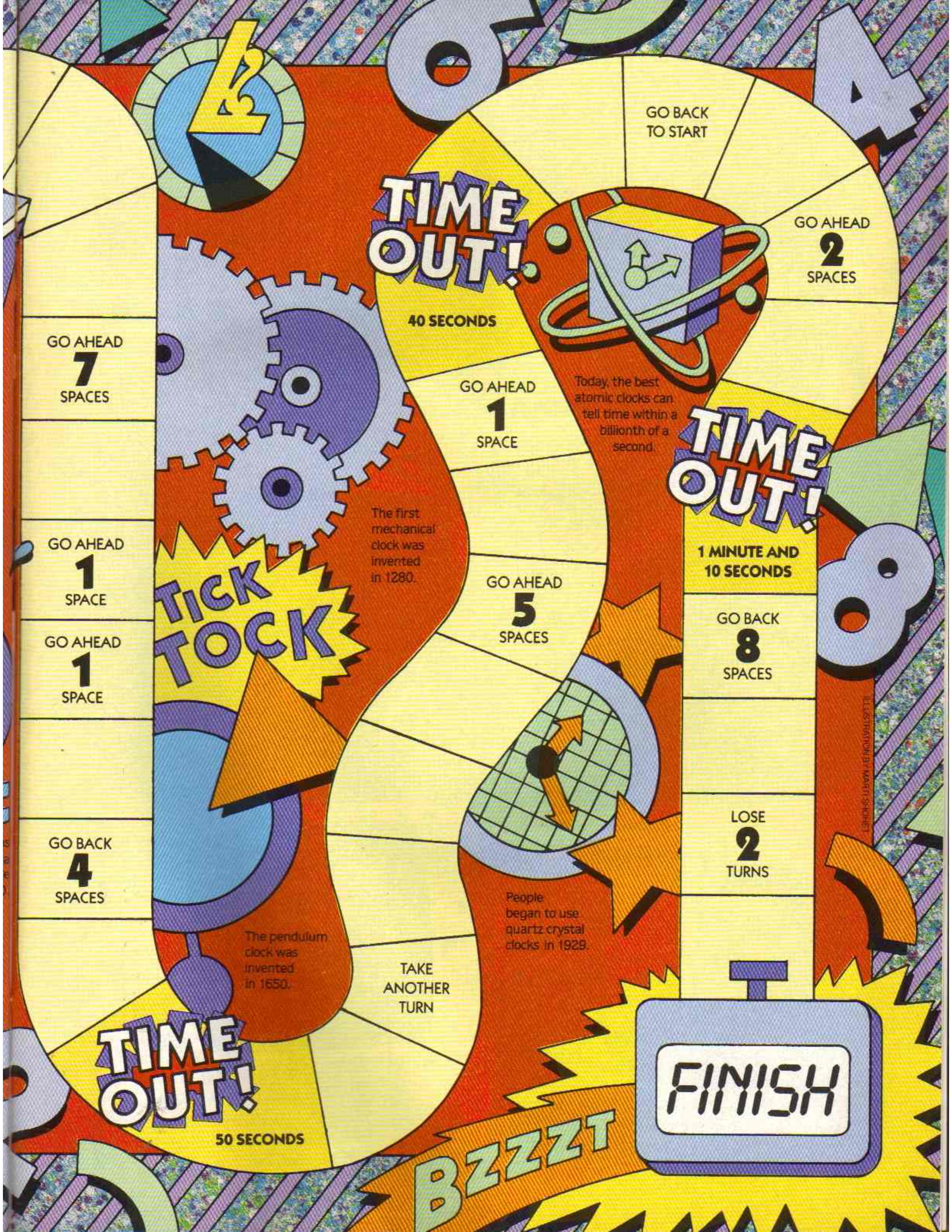


ILLUSTRATION BY MARTI SHOHET

SQUARE ONE WANTS TO KNOW

We asked some kids, "What's the best brainteaser you know?" Can you solve their favorite stumpers? To see if you're right, check the Did It! page for the answers.



1

ALICE RODRIGUES

Arnold weighs twice as much as half the weight of Danny. If Danny weighs 120 pounds, how much does Arnold weigh?



2

LINDSAY GANIS

Which is larger? $2+5+6+1+0$ or $2\times5\times6\times1\times0$?



3

MICHAEL COLOMBO

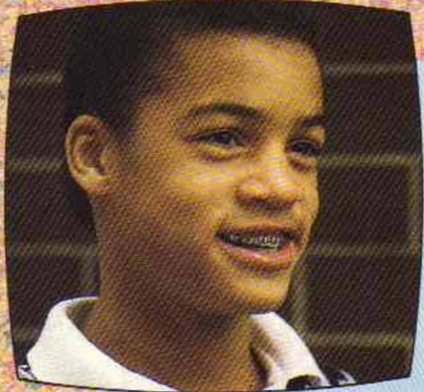
If eight snails crawl 8 feet in 8 minutes, how long would it take 16 snails to crawl 8 feet?



4

MESCELLE YOUNG

A heart beats about 103,000 times a day. That's how many times a minute?



5

GREGORY HERBERT

Henry was born in 1976, but he has only celebrated four birthdays. How can that be?



6

JENI RECA

A friend has 10 red buttons and 10 green ones. If she wanted a pair of the same color, what is the *least* number of buttons she'd have to pick up—without looking?

PHOTOGRAPHY: RICHARD HUTCHINGS

Contact Lens



This Bee Has Been Bugged

A solar-powered microchip has been stuck to the back of this insect with a special "bee glue." When the bee takes off, the chip will send signals to a computer miles away. There, bee researchers will study its flight patterns and, um, *bee*-havior.

Scientists at the Oak Ridge National Laboratory in Tennessee invented this gadget to help learn more about African "killer" bees. Thirty years ago, some of them escaped from a laboratory in Brazil and have been buzzing northward ever since. Killer bees make less honey than other bees. They get their name because they are not as gentle as honeybees. By studying the killer bees' flight patterns, researchers hope to find out how they will affect farming and beekeeping in the U.S.

Towards the end of this year, the African bees are expected to cross the Mexican border into the U.S. Scientists are calling it "B-Day."

Reviews

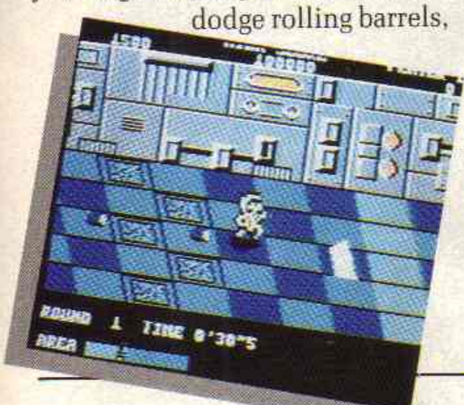


Software

Metro Cross

For Commodore 64/128 and Atari ST computers Epyx, Inc., $29.95

This videogame is a goofy race against the clock. Each round, you must get to the finish line before time runs out. Along the way, you've got to jump over hurdles, dodge rolling barrels, and avoid stepping on slime tiles, rats, or air vents.



If you're lucky, you can hop on a skateboard and whiz across the finish line. So it can start all over again!

There are 24 different levels in all. (The upper levels are *very* hard to finish.) And you can play by yourself or with another person. It won't take a lot of brain power to get through Metro Cross. But if you have quick reflexes and steady nerves, you'll have a lot of fun with this game.—*Russell Ginns*

Rack 'Em

For IBM/Tandy and C64/128 computers Accolade, $29.95-$39.95

Here's a pool program with great graphics and enough details to give you the feel of a real pool table. You can aim, adjust how hard to hit the cue ball and choose how much "English" to put on the ball, so you'll be able to come up with some pretty fancy shots.

You can play straight pool, eight-ball, bumper-ball, or make up your own game with your own rules. And there are lots of extra features that keep the game interesting.

If you're interested in pool, *Rack 'Em* will teach you a lot about the real thing. But even if you've never seen a pool table before, this program is a lot of fun to play. —*R.G.*

Books

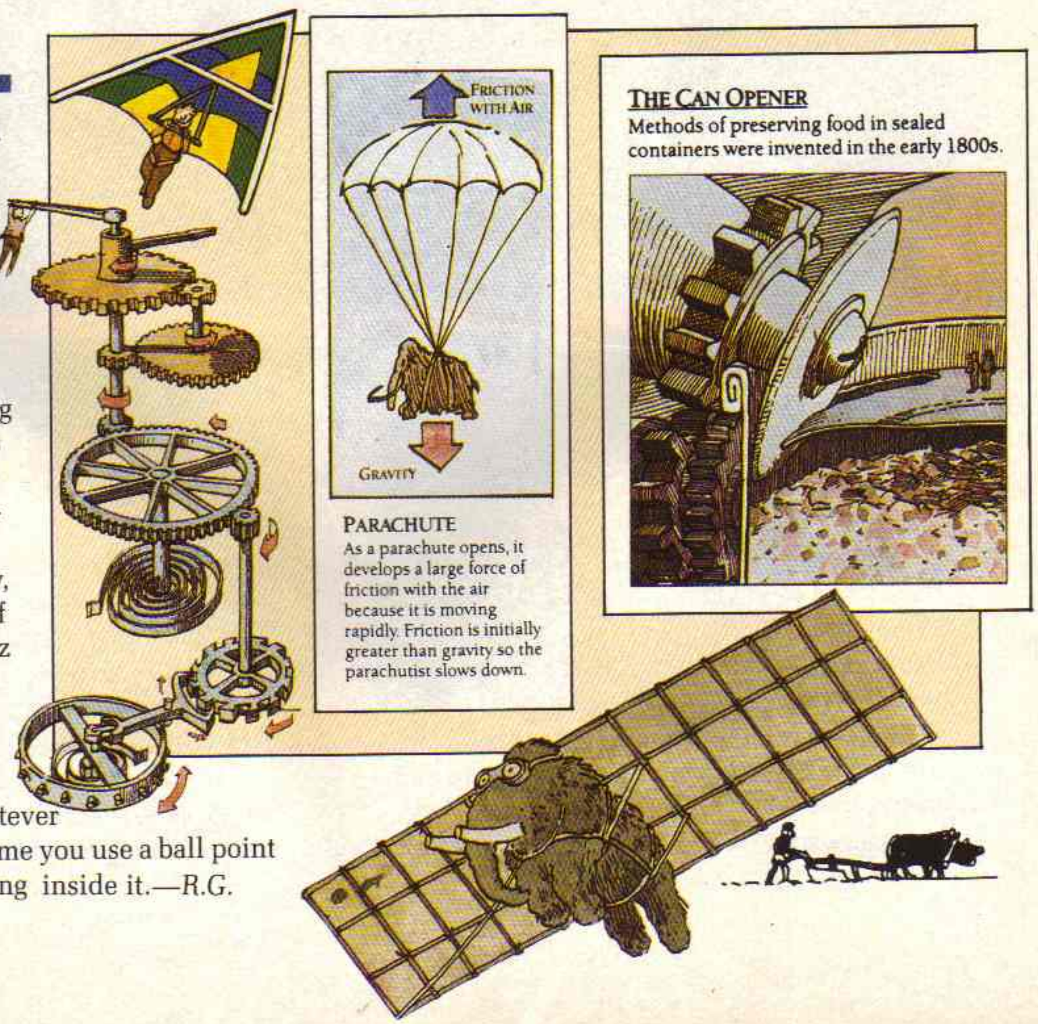
The Way Things Work

by David Macaulay Houghton Mifflin Company $29.95

Would you like to see how a parking meter works? How about an electric guitar or movie projector? It's all in this huge book, along with refrigerators, staplers, toilets and nuclear reactors.

The Way Things Work has hundreds of clear illustrations of objects that we use almost every day, along with simple explanations of what makes them tick, whirr, buzz or hum.

It's not the type of book that you'd read all at once. But it's great as a reference book, or fun to just flip through and read whatever catches your eye. And the next time you use a ball point pen, you'll know what's happening inside it.—*R.G.*



The Slipped Disk Show

COMPUTER QUESTIONS AND ANSWERS

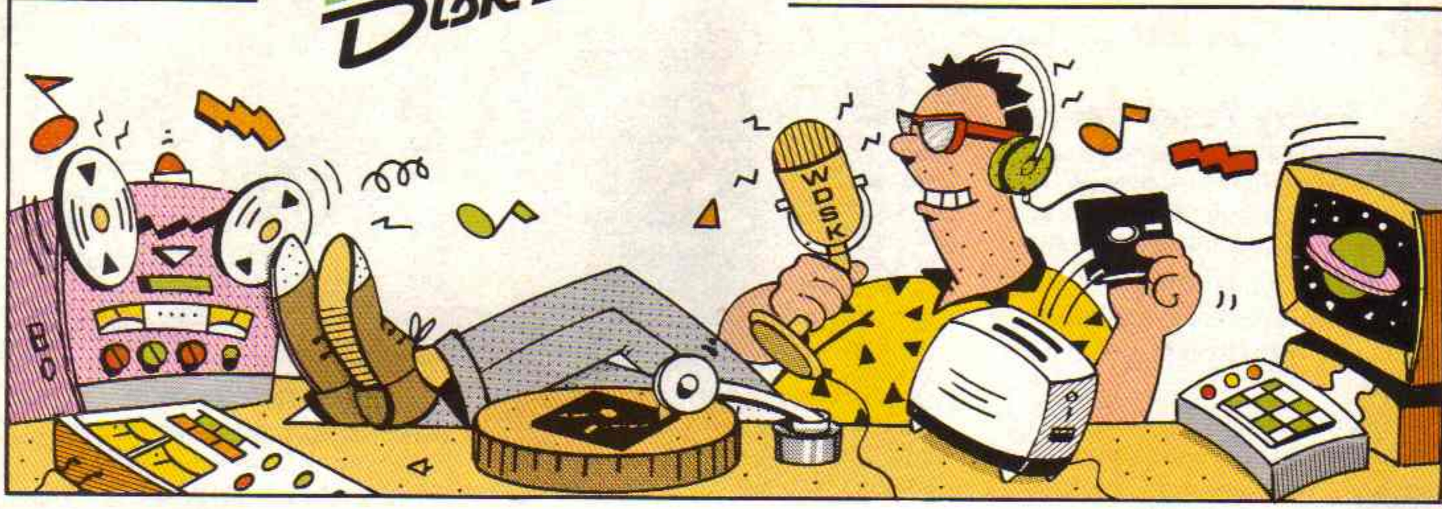


ILLUSTRATION BY CAMERON EAGLE

Hello, all you compu-maniacs out there. This is Slipped Disk, world-famous floppy disk jockey, with another edition of the Slipped Disk Show. We're the only computer advice show that guarantees great taste and fewer calories with every bite. (Or is that byte?)

And speaking of bites—my dog, Floppy, just decided to go on a diet. He says he's going to stop chewing on my socks between meals. I guess he wants to look good in a bathing suit when we go to the beach this summer. The only problem is he doesn't *wear* a bathing suit. (But he does have a very nice terry-cloth bathrobe.)

Speaking of meals, let's see if we can answer a couple of questions before it's time for lunch. Here's one from **Erik Nicholson**, of East Orange, New Jersey. He asks:

"Why is software called software?"

Erik, that's a hard question. But I'll try to give you a firm answer.

Is software really soft? After all, you wouldn't want to sleep on a mattress made out of floppy disks. In fact, the term *software* includes all kinds of things, such as a program written on a piece of paper, a floppy disk, or a game cartridge. Any program or set of instructions for the computer is considered software, no matter how it is recorded or stored.

So why is it called software? Probably because it's the part of the computer that can be easily changed. *Hard*ware, on the other hand, is not so easy to change. Hardware includes the computer chips, the screen, the keyboard, the disk drive and all the circuits and wiring inside of them. Hardware is the machinery and software is the instructions that tells it what to do. And those are the hard facts about software.

And speaking of hard, I think Floppy is having a hard time sticking to his diet. I wouldn't mind him chewing on my socks so much if he would only let me take them off first. Anyway, here's another question we can sink our teeth into. It's from **Kari Lewis,** 11, of Medford, Oregon, and she wants to know:

"What does it mean to 'boot' a program?"

Kari, don't mention the word boot around Floppy, at least not when he's hungry. Of course, you're not talking about real boots, the kind you wear, but that is where the term "boot a program" comes from. It's short for bootstrapping, as in, "pull yourself up by your bootstraps."

What does it mean? Well, you probably know that a computer can't do anything without a program, or set of instructions. But when you turn on your computer, there's nothing in its memory—no program. So, how does the computer load the first program into its memory?

Well, the fact is, most computers have one simple set of instructions built-in. When you turn on the computer, those instructions tell it to look in the disk drive for a disk that has its full set of operating instructions. Then it loads the first of those instructions into memory and they take over. This process is called "bootstrapping" or "booting."

Now, isn't that a kick in the pants? Anyway, I'd like to answer another question, but Floppy got so hungry, he ate the rest of the mail. Better send in some more questions and I promise not to let Floppy eat those. Send them to:

The Slipped Disk Show
3-2-1 CONTACT Magazine
1 Lincoln Plaza,
New York, NY 10023

Bye-bye!

Slipped Disk never goes on a diet. He just buys a bigger disk drive.

Basic Training

Party Program

IBM, Apple II, Commodore 64/128

Here's a computer game to play with a bunch of friends—the more the merrier! First the program asks you for the names of everyone who will play. Type them in, one at a time.

Then you must type in a list of commands. These can be phrases such as, "jump around," or "bark like a dog."

Then the computer asks for a list of places or objects. Type them in as part of a phrase. For example: "under the table," or "with a spoon."

When you're done, the program mixes up all three lists and starts giving orders to the players. You can just have fun doing the crazy things the computer says, or you can make a game out of it by keeping score. Every time you follow the computer's orders, you get one point.

The program is written for the IBM PC and compatibles. To use it on Apple II machines, change all CLS commands to HOME. To use it on the Commodore 64/128, change all CLS commands to PRINT CHR$(147).

IBM

```
10  REM PARTY
20  DIM N$(30), C$(30), P$(30)
30  N=0:C=0:P=0
40  CLS
50  PRINT "ARE YOU READY TO
    PARTY?"
60  PRINT "Y OR N";
70  INPUT A$
80  IF A$<>"Y" THEN 280
90  CLS
100 GOSUB 300
110 GOSUB 390
120 GOSUB 480
130 P$ (P) = "WITH ":P=P+1
140 REM RANDOM CHOICES
150 CLS
160 N1=INT(RND(1)*N)
170 C1=INT(RND(1)*C)
180 P1=INT(RND(1)*P)
190 PRINT N$(N1);"—YOU
    MUST ";
200 PRINT C$(C1);
205 PRINT " ";
210 PRINT P$(P1);
220 IF P$ (P1)<>"WITH " THEN 250
230 N1=INT(RND(1)*N)
240 PRINT N$(N1)
250 PRINT
260 INPUT "KEEP PLAYING? Y/
    N";A$
270 IF A$="Y" THEN 140
280 PRINT "TOO BAD!"
290 END
300 REM NAMES
310 CLS
320 PRINT "ENTER NAME AND
    PRESS RETURN"
330 PRINT "WHEN DONE WITH
    NAMES, JUST PRESS
    RETURN"
340 X$=""
350 INPUT X$: IF X$="" THEN
    380
360 N$(N)=X$:N=N+1
370 GOTO 300
380 RETURN
390 REM COMMANDS
400 CLS
410 PRINT "ENTER A
    COMMAND AND PRESS
    RETURN"
420 PRINT "WHEN DONE WITH
    COMMANDS, PRESS
    RETURN"
430 X$=""
440 INPUT X$:IF X$="" THEN
    470
450 C$(C)=X$:C=C+1
460 GOTO 390
470 RETURN
480 REM OBJECTS OR PLACES
490 CLS
500 PRINT "ENTER PHRASE
    WITH OBJECT OR PLACE,
    THEN PRESS RETURN"
510 PRINT "WHEN DONE, JUST
    PRESS RETURN"
520 X$=""
530 INPUT X$:IF X$="" THEN
    560
540 P$(P)=X$:P=P+1
550 GOTO 480
560 RETURN
```

Maze Craze

Apple II, Commodore 64/128

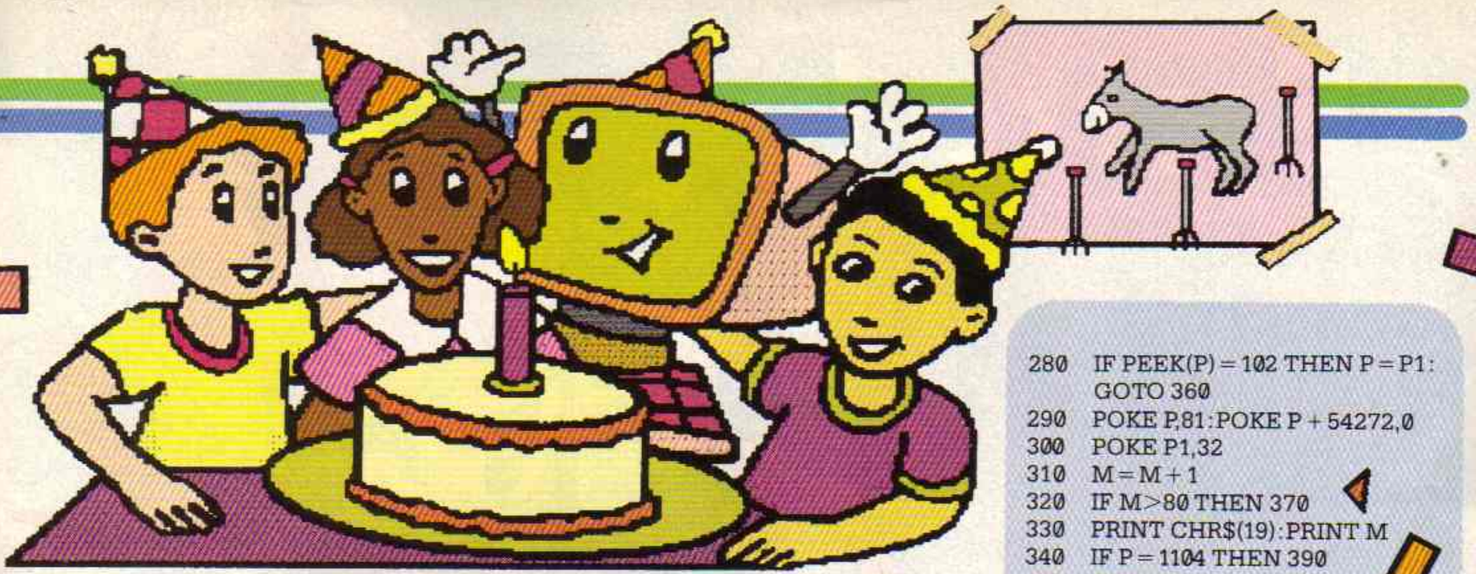
You might get lost when you play this game, but that's part of the fun. This program draws a maze on your computer screen. You have to find your way from the lower right hand corner to the upper left hand corner. Better hurry, though. You only have a limited number of moves before you lose.

You move by pressing the I,J,K, or M keys. The computer keeps track of how many moves you've made and displays the number on your screen. If you get stuck, you can get rid of part of the maze. First, press the S key, then press I,J,K, or M, depending on which part of the maze you want to go through. But you can only do this three times, so don't waste it.

This program found its way to us from **Stuart Zilm,** of Kelowna, British Columbia, Canada. We're glad it didn't get lost on the way.

Apple II

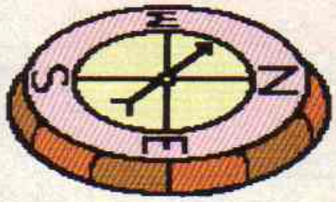
```
10  HOME: GR :M=0:S=0
20  COLOR=6
30  FOR A=0 TO 39
40  FOR B=0 TO 39
50  PLOT A,B
60  NEXT B: NEXT A
70  REM CREATE MAZE
80  COLOR=0
90  FOR X=1 TO 750
100 A=INT (RND (1) * 40)
```



```
110  B=INT (RND (1) * 40)
120  PLOT A,B
130  NEXT X
140  COLOR=4: PLOT 0,0
150  COLOR=15: PLOT 39,39
160  C=39:D=39
170  A=39:B=39
180  REM MOVEMENT
190  GET A$
200  IF A$ < > "S" THEN 310
210  IF S > 4 THEN 310
220  S=S+1
230  GET A$
240  GOSUB 530
250  IF A < 0 THEN 300
260  IF B < 0 THEN 300
270  IF B > 39 THEN 300
280  IF A > 39 THEN 300
290  COLOR=6: PLOT A,B
300  A=C:B=D: GOTO 180
310  GOSUB 530
320  IF A=C AND B=D THEN 180
330  IF A < 0 THEN A=0: GOTO
     450
340  IF A > 39 THEN A=39: GOTO
     450
350  IF B > 39 THEN B=39: GOTO
     450
360  IF B < 0 THEN B=0: GOTO
     450
370  IF SCRN(A,B)=0 THEN
     A=C:B=D: GOTO 450
380  COLOR=15: PLOT A,B
390  COLOR=6: PLOT C,D
400  M=M+1
410  IF M > 110 THEN 460
420  HOME: PRINT M
430  IF A=0 AND B=0 THEN 480
440  C=A:D=B
450  GOTO 180
460  PRINT "YOU RAN OUT OF
     MOVES"
470  GOTO 490
480  PRINT "YOU WON!!"
490  PRINT "PLAY AGAIN? Y/N"
500  GET A$
510  IF A$="Y" THEN 10
520  END
530  REM DIRECTIONS
540  IF A$="I" THEN B=B-1
550  IF A$="M" THEN B=B+1
560  IF A$="K" THEN A=A+1
570  IF A$="J" THEN A=A-1
580  RETURN
```

Commodore 64/128

```
10   PRINT CHR$(147)
20   POKE 53281,1:POKE 53280,4
30   M=0:S=0
40   REM CREATE MAZE
50   FOR X=1 TO 450
60   A=INT(RND(1)*919)+1104
70   POKE A,102
80   POKE A+54272,2
90   NEXT X
100  POKE 1104,81
110  POKE 2023,81
120  POKE 56295,0
130  P=2023:P1=2023
140  REM MOVEMENT
150  GET A$:IF A$=""THEN 150
160  IF A$<>"S" THEN 240
170  IFS>3 THEN 240
180  S=S+1
190  GET A$:IF A$="" THEN 190
200  GOSUB 440
210  IF P<1104 OR P>2023 THEN
     230
220  POKE P,32
230  P=P1:GOTO 140
240  GOSUB 440
250  IF P=P1 THEN 140
260  IF P<1104 THEN P=P1:
     GOTO 360
270  IF P>2023 THEN P=P1:
     GOTO 360
280  IF PEEK(P)=102 THEN P=P1:
     GOTO 360
290  POKE P,81:POKE P+54272,0
300  POKE P1,32
310  M=M+1
320  IF M>80 THEN 370
330  PRINT CHR$(19):PRINT M
340  IF P=1104 THEN 390
350  P1=P
360  GOTO 140
370  PRINT "YOU RAN OUT OF
     MOVES"
380  GOTO 400
390  PRINT "YOU WON!!!"
400  PRINT "PLAY AGAIN? Y/N"
410  GET A$:IF A$=""THEN 410
420  IF A$="Y" THEN 10
430  END
440  REM DIRECTIONS
450  IF A$="I" THEN P=P-40
460  IF A$="M" THEN P=P+40
470  C=(P-1103)/40
480  IF C=INT(C) THEN 500
490  IF A$="K" THEN P=P+1
500  C=(P-1064)/40
510  IF C=INT(C) THEN 530
520  IF A$="J" THEN P=P-1
530  RETURN
```



Send Us Your Programs

If you've written a program you'd like us to print, send it in. If we like it, we'll print it and send you $25. Include a note telling us your name, address, age, T-shirt size and type of computer.

All programs must be your own original work. We cannot return programs. Please do not send disks.

Send your program to:
Basic Training
3-2-1 CONTACT Magazine
1 Lincoln Plaza
New York, N.Y. 10023

Extra!

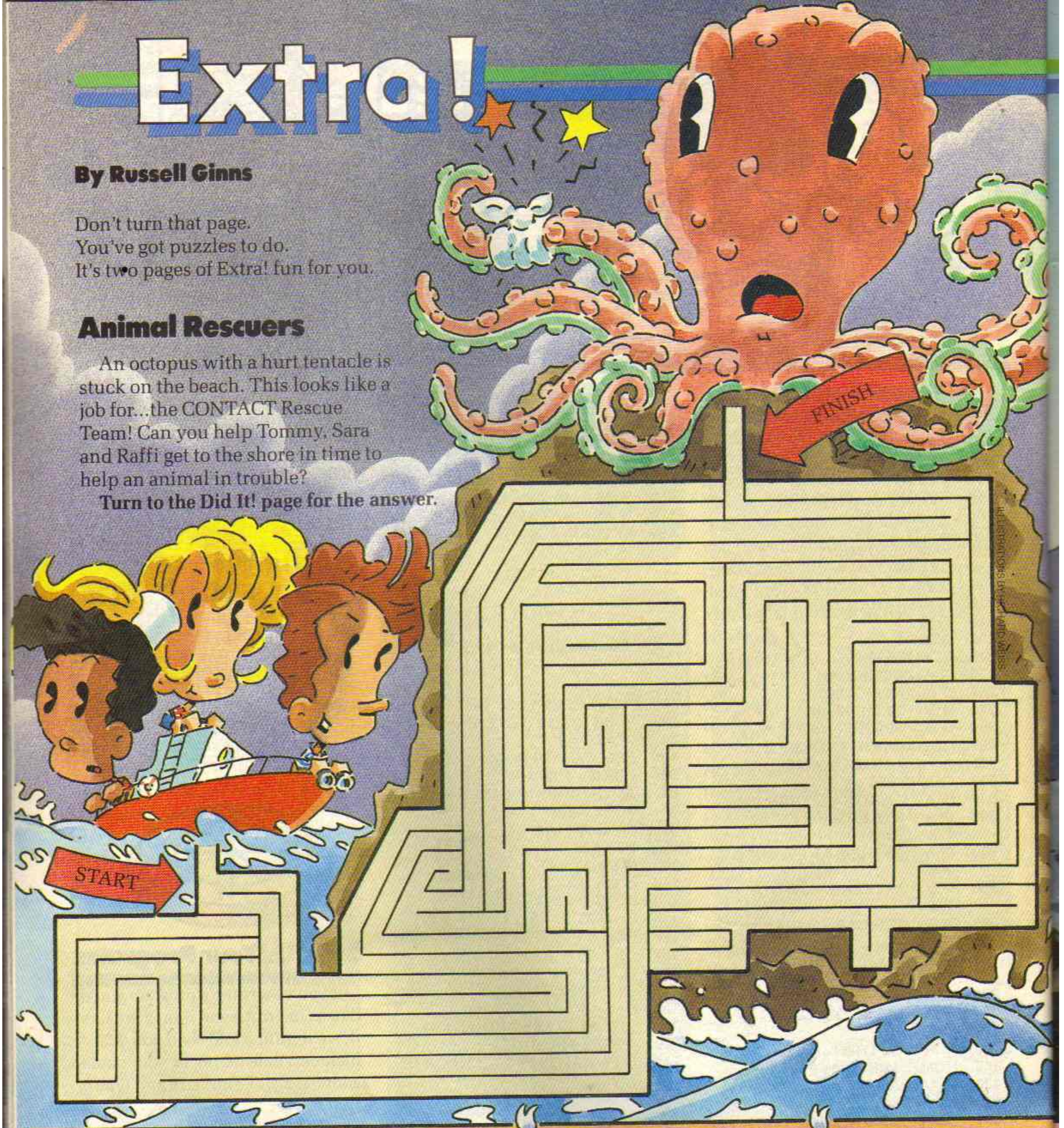
By Russell Ginns

Don't turn that page.
You've got puzzles to do.
It's two pages of Extra! fun for you.

Animal Rescuers

An octopus with a hurt tentacle is stuck on the beach. This looks like a job for...the CONTACT Rescue Team! Can you help Tommy, Sara and Raffi get to the shore in time to help an animal in trouble?

Turn to the Did It! page for the answer.

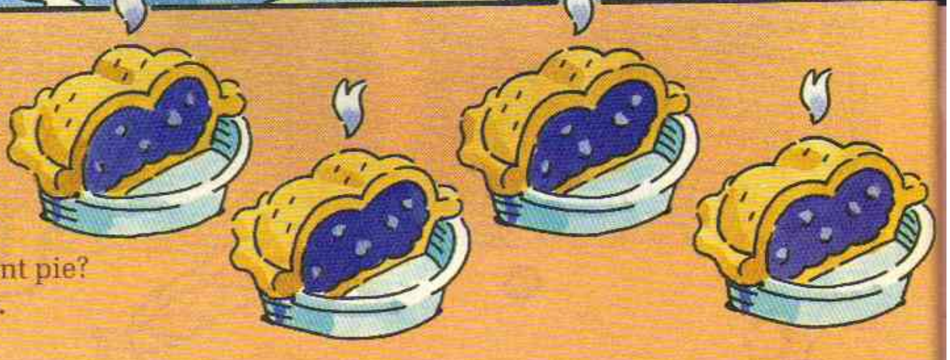


Taste Test

CONTACT's official taste-tester wanted to find out which pie was different from the others. So he tasted half of each one while figuring it out.

Just by looking, can you find the different pie?

The answer is baked in the Did It! page.





Business As Usual

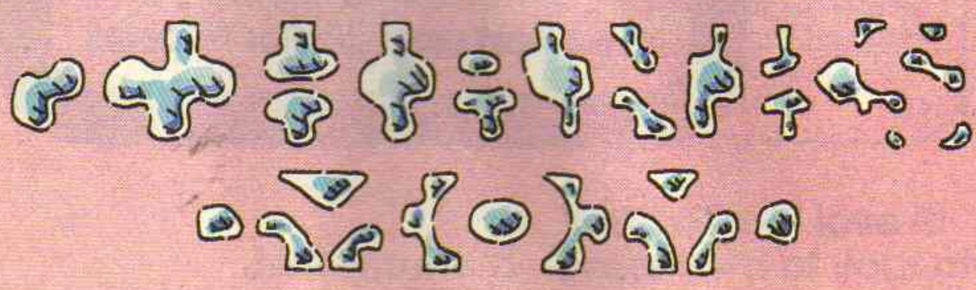
The fires at Yellowstone National Park have died down and it's time for things to get back to normal. How many Yellowstone residents can you find in our word search?

Words go up, down, across, backwards and diagonally. Use our word list. The leftover letters will spell a Yellowstone attraction.

Answer on the Did It! page.

- ELK
- SQUIRREL
- MOOSE
- OWL
- BUFFALO
- WOODPECKER
- WOLF
- BEAR
- HAWK
- RANGER
- CAMPERS
- LODGEPOLES
- ASPEN
- SHEEP
- MICE

O	O	P	E	E	H	S	L	L	N
L	O	D	G	E	P	O	L	E	S
A	W	W	O	L	F	D	P	R	F
F	L	K	L	E	A	S	I	R	B
F	R	E	G	N	A	R	M	I	E
U	T	H	H	A	W	K	I	U	A
B	S	R	E	P	M	A	C	Q	R
F	E	S	O	O	M	U	E	S	L
W	O	O	D	P	E	C	K	E	R



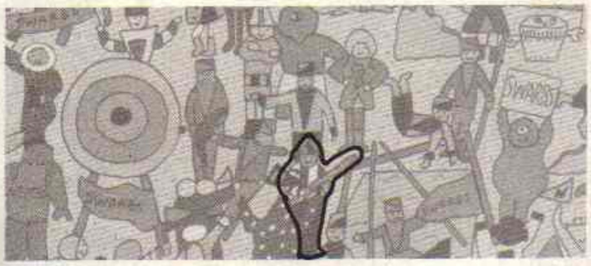
Top Secret

In honor of a special May holiday, we thought we'd share a secret message with you. Can you figure out what it says? Hint: Show it to your mother on May 14th.

This message has been decoded on the Did It! page.

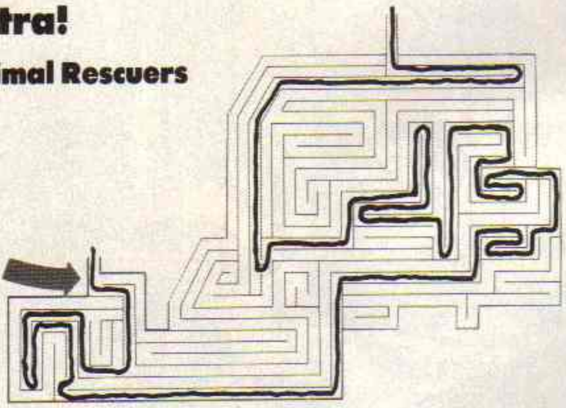
Did It!

Find Foogoo

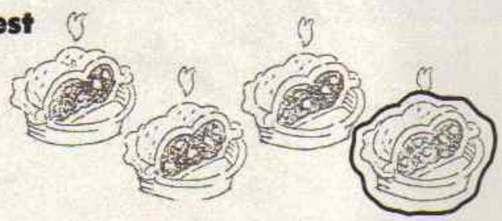


Extra!

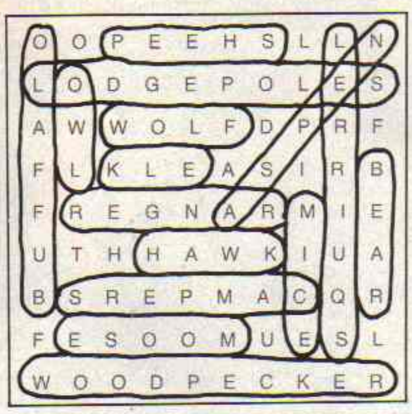
Animal Rescuers



Taste Test



Business As Usual



Answer: OLD FAITHFUL

Top Secret

The message is: THANKS MOM. (May 14th is Mother's Day.)

Who's Taller?

1. Godzilla, 200′ **2.** Arnold Schwarzenegger, 6′3″ **3.** Jon Bon-Jovi, 5′10″ **4.** Debbie Gibson, 5′6″ **5.** Danny Devito, 5′

Family Size

Malady's room is 120 square feet. Alec's room is 100 square feet. Malady got the bigger room.

Square One Wants to Know

1. 120 pounds. Half the weight of Danny is 60 pounds. Twice that is 120.

2. $2+5+6+1+0=14$. $2\times5\times6\times1\times0=0$. Any number multiplied by zero will equal zero.

3. Eight minutes. No matter how many snails there are, they still travel at the same speed!

4. About 7½ times. Divide 103,000 by 24 to find out the beats per hour. Divide that answer by 60 to find beats per minute.

5. Henry was born on February 29, during a leap year. Leap years—and February 29—occur only once every four years.

6. Since there are only two colors, *three* buttons will guarantee a pair of the same color.

Next Month!

Food Poll

More than 12,000 of you told us what you eat. Get the results in this food feature.

Animal Dads

Human fathers aren't the only beings that care for their young. Some male animals watch out for the little ones, too. Find out who they are in this photo feature.

Plus the Square One Section and Much More!

Put the right magazine in a child's hands...

and watch the fun and learning begin!



PRE SCHOOL

ages 2 through 6

SESAME STREET MAGAZINE

From the TV show that revolutionized learning—Big Bird, Bert and Ernie, Grover and all the other "folks" keep your pre-schooler entertained for hours! Plus a Parent's Guide! Ten issues a year, just $13.97.



ages 6 to 10

KID CITY MAGAZINE
(Formerly Electric Company)

Makes reading, language skills and learning fun. Educates and entertains through stories, puzzles, word games, projects and features. Perfect for Sesame Street Graduates! Ten issues for just $13.97.

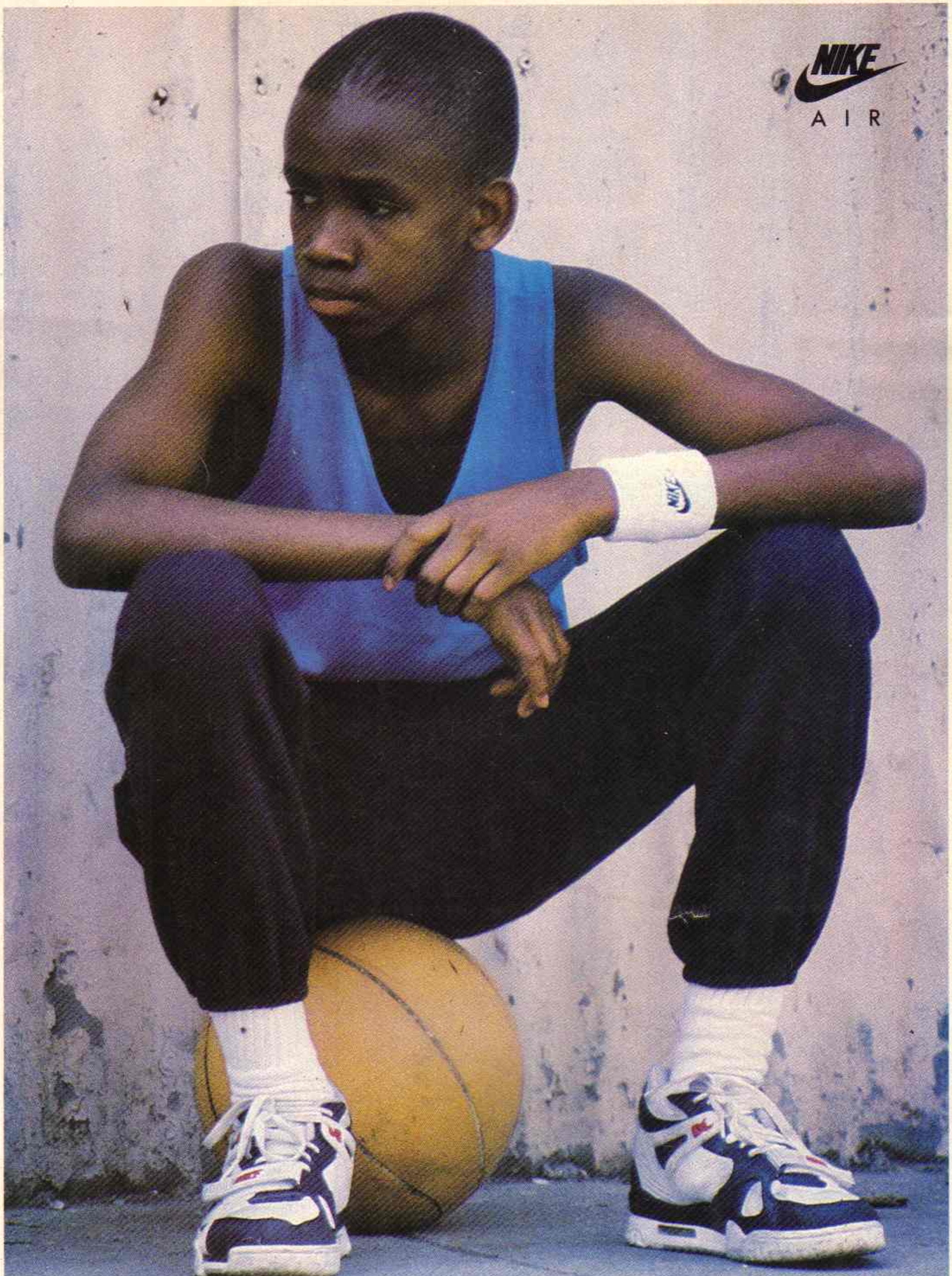


ages 8 to 14

3-2-1 CONTACT MAGAZINE

Award winning articles about Nature, Science and Technology. Each issue is packed with puzzles, projects, and challenging Square One TV math pages ...All designed to help your child learn while having fun. Ten issues for just $15.97.

Your kid will love it!
Just return the order card of your choice...TODAY!



SOMEDAY.